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MONTHLY PROGRESS REPORT ★ SECTION 7

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HEALTH

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ARMY SERVICE FORCES ★ WAR DEPARTMENT

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HEALTH

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HEALTH

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OFFICE OF THE SURGEON GENERAL

HEADQUARTERS, ARMY SERVICE FORCES, WAR DEPARTMENT

TABLE OF CONTENTS

PART I

DISEASE AND INJURY

PART II

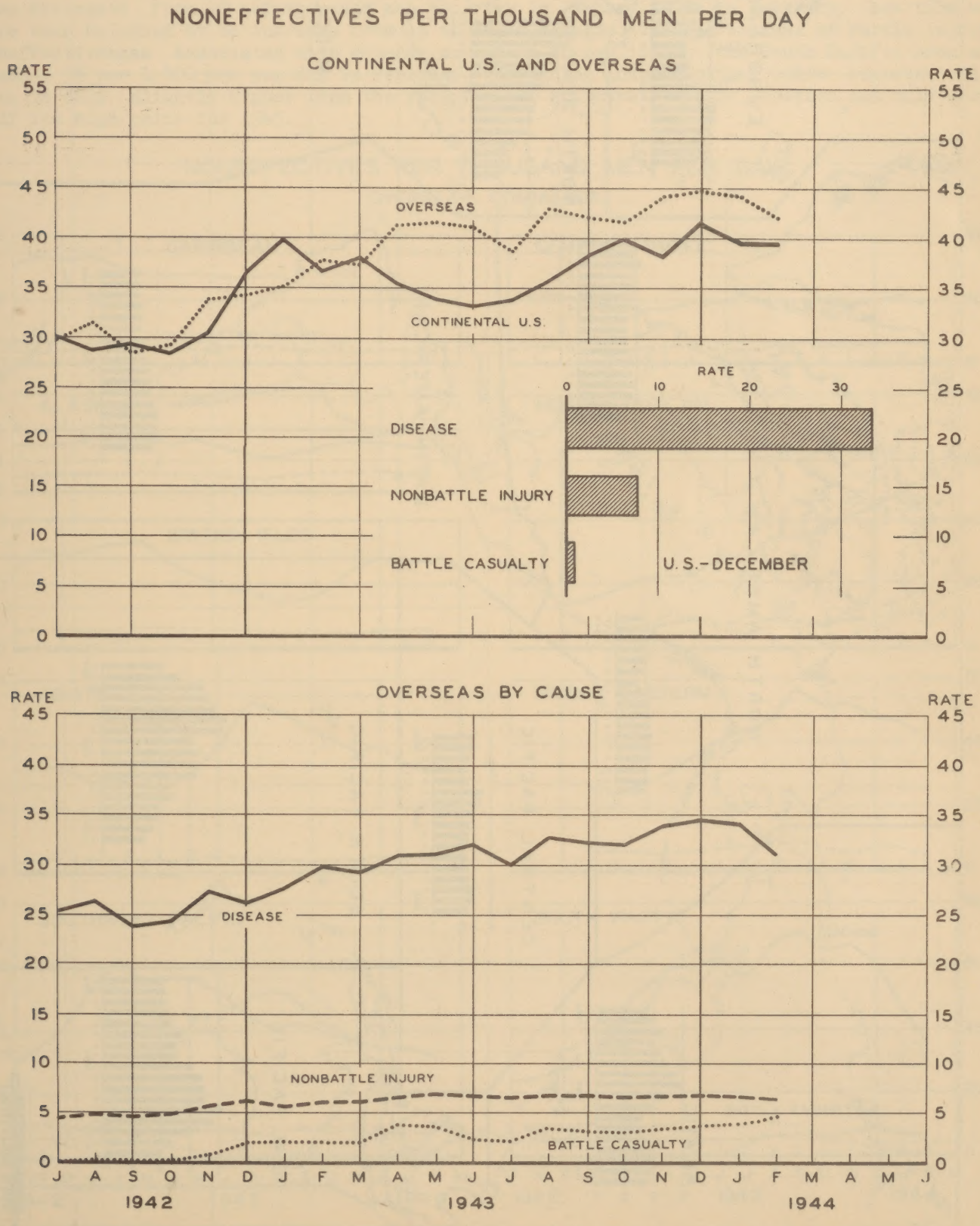
HOSPITALIZATION

PART III

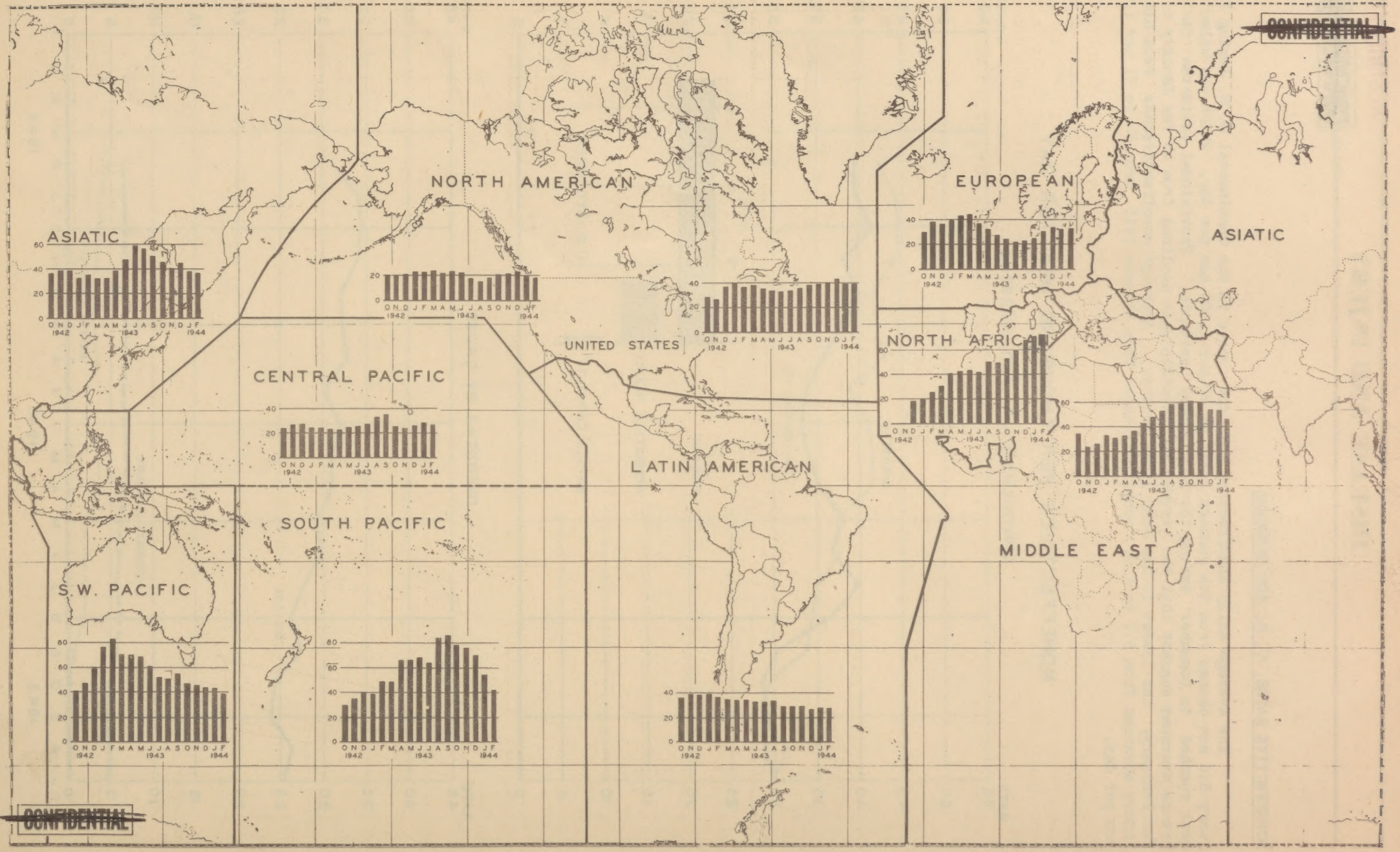
MORTALITY

NONEFFECTIVE RATES, U. S. AND OVERSEAS

The average daily noneffective rate for troops in the Continental U. S. during February did not change from its January level of 40 per 1,000 men per day, which was below the peak reached in December during the respiratory epidemic. Provisional estimates for all troops overseas suggest that the average noneffective rate declined from 44 for January to 42 for February, the lowest it has been since October. Although noneffectiveness from battle injury advanced from 3.7 to 4.6, noneffectiveness from disease fell from 34 to 31 per 1,000 men per day.



NONEFFECTIVES PER THOUSAND MEN PER DAY



DISEASE AND INJURY

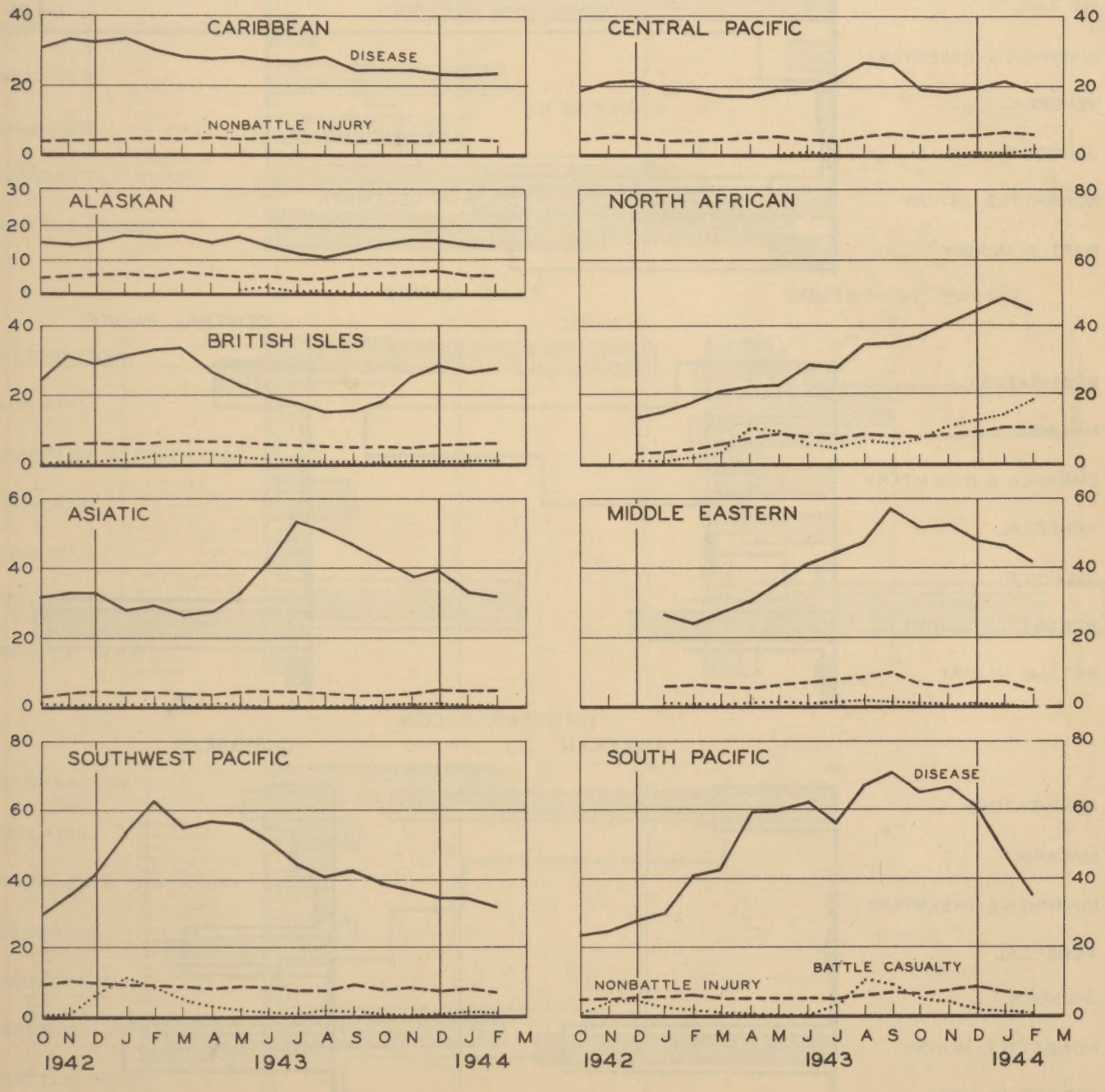
NONEFFECTIVE RATES OVERSEAS

The noneffective rate, measuring the combined effect of admissions to hospital and quarters as well as the length of time lost during treatment and convalescence, is the best single index to the health of the Army. In the charts below, the total rates shown on the map across the page are separated into the components attributable to disease, nonbattle injury, and battle injury. Points for the most recent months are provisional, being based upon radio reports.

In most theaters the noneffective rate continued to decline during February. In North Africa, however, the total rate continued to climb. Noneffectiveness because of disease decreased from 48 per thousand men per day in January to 44 in February, but this was more than balanced by an increase from 13 to 18 in noneffectiveness because of battle injury. Noneffectiveness associated with disease continued to decline in the South Pacific Area and reached 35 per 1,000 men per day in February, according to provisional radio reports. This rate is only slightly higher than the rate for the Southwest Pacific Theater and only about half its high point for 1943.

NONEFFECTIVES PER THOUSAND MEN PER DAY

OVERSEAS COMMANDS

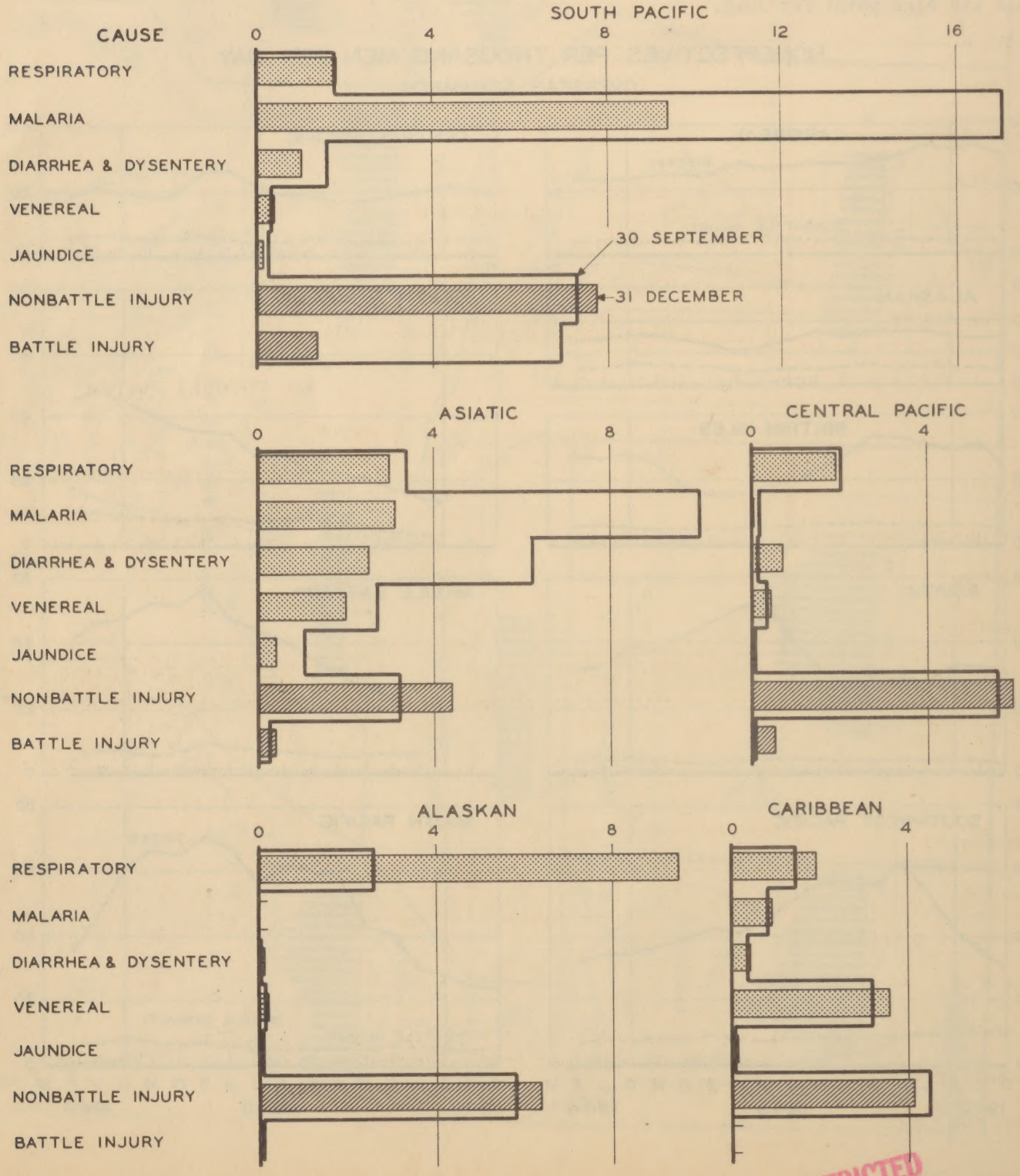


CAUSES OF NONEFFECTIVENESS IN OVERSEAS COMMANDS

In most theaters there have recently been marked changes in the pattern of noneffectiveness. Some of the changes are seasonal; others reflect superior control over environmental hazards; and still others have resulted from changes in the tactical situation.

Highly stable and reliable indices of noneffectiveness are not yet available for recent months, but the relative importance of various causes may be roughly estimated from the numbers of patients under treatment at the end of any month, when preliminary reports are made. The number of patients remaining in hospital and quarters on 30 September and 31 December in each theater has been expressed as a ratio of strength and is shown graphically below for each of several major overseas commands.

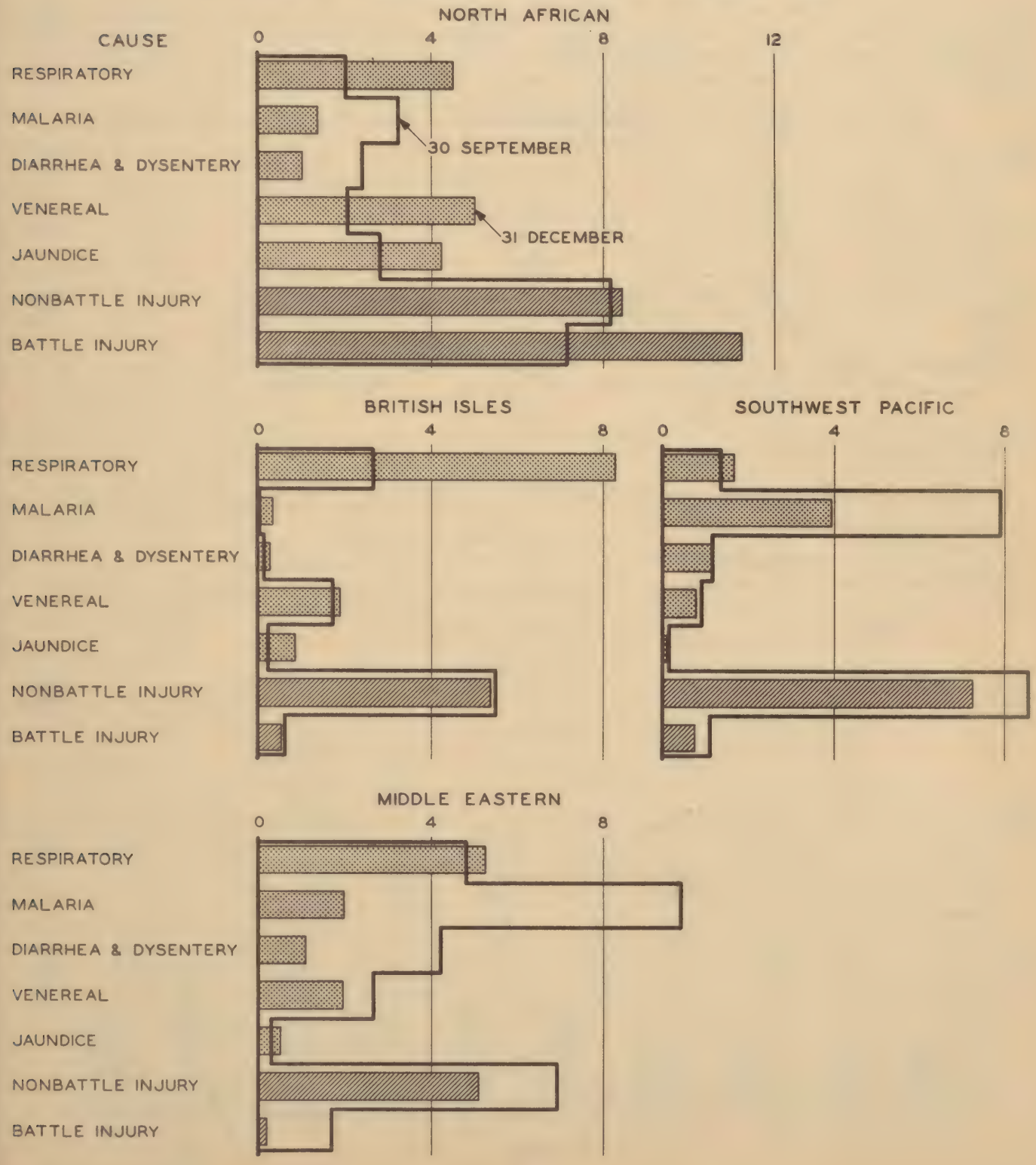
PATIENTS UNDER TREATMENT PER THOUSAND STRENGTH, OVERSEAS COMMANDS, 30 SEPT. - 31 DEC. 1943



CAUSES OF NONEFFECTIVENESS IN OVERSEAS COMMANDS (Continued)

There was little change in the Central Pacific, except for the appearance of battle injury as a cause of some noneffectiveness, and in the Caribbean, but considerable variation occurred elsewhere. In North Africa the major increases were associated with battle injury, venereal disease, respiratory disease, and jaundice, and the decreases with malaria and diarrhea and dysentery. In the Asiatic Theater there were seasonal reductions in malaria and diarrhea and dysentery. Noneffectiveness from malaria declined sharply in the South and Southwest Pacific, and in the South Pacific the high noneffective rate from battle injury at the end of the New Georgia campaign gave way to a relatively low rate at the end of the year.

PATIENTS UNDER TREATMENT PER THOUSAND STRENGTH, OVERSEAS COMMANDS, 30 SEPT. - 31 DEC. 1943



DISEASE AND NONBATTLE INJURY

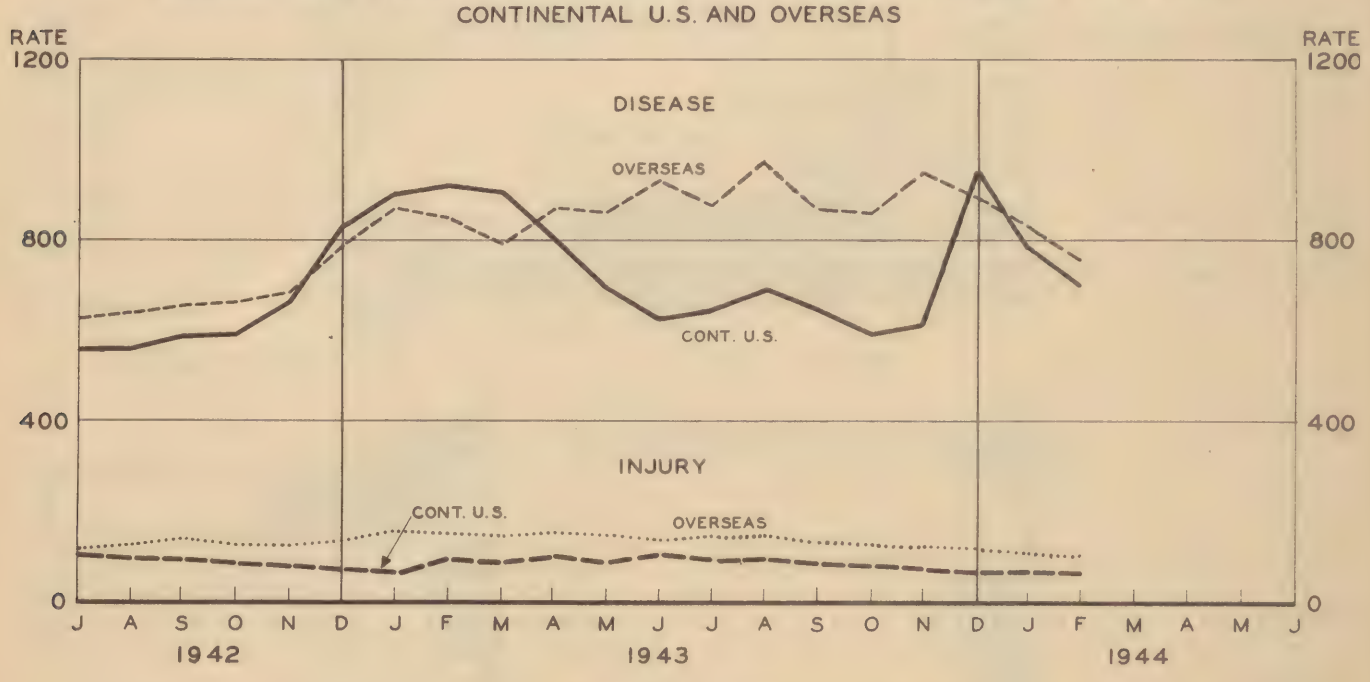
During February admission rates for all disease declined both in the U. S. and overseas. According to telegraphic information, reductions of about 15 percent occurred among troops of the Alaskan Defense Command, in North Africa, and in the Middle East. Especially prominent was the downward trend of admissions for respiratory disease in the U. S., the British Isles, and North Africa. Other factors of interest were a decline in venereal disease admissions in North Africa, some reduction in the admission rates for malaria in both the South and Southwest Pacific, and a decreased incidence of undiagnosed fever in the Southwest Pacific Theater.

The admission rate for injury in the U. S. during February was virtually unchanged at 68 admissions per 1,000 men per year. The overseas rate of 105 for February is the lowest for any month since March 1942.

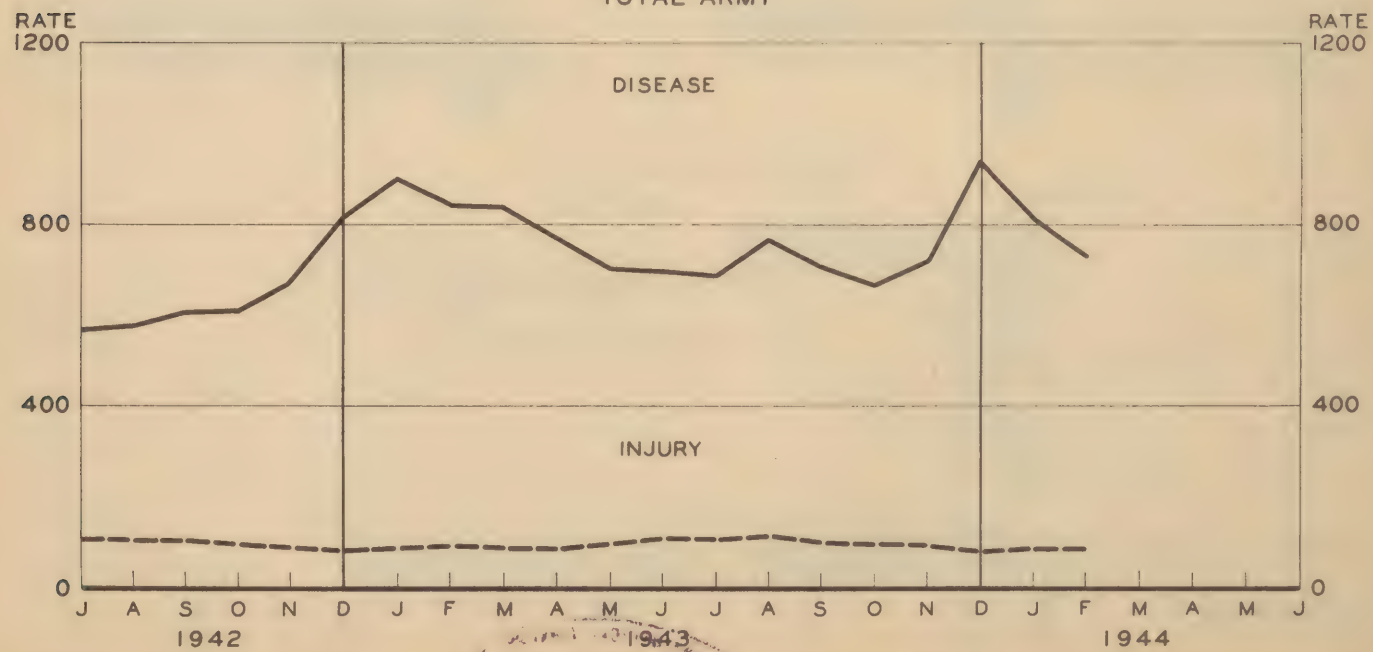
The chart at the bottom of the page shows the trend of admissions for disease and nonbattle injury in the entire U. S. Army. The most recent points, being partly based on telegraphic reports from overseas, are quite provisional. For February the rates are 720 admissions per 1,000 men per year for disease and 80 for nonbattle injury.

DISEASE AND INJURY, ADMISSIONS PER THOUSAND MEN PER YEAR

CONTINENTAL U.S. AND OVERSEAS

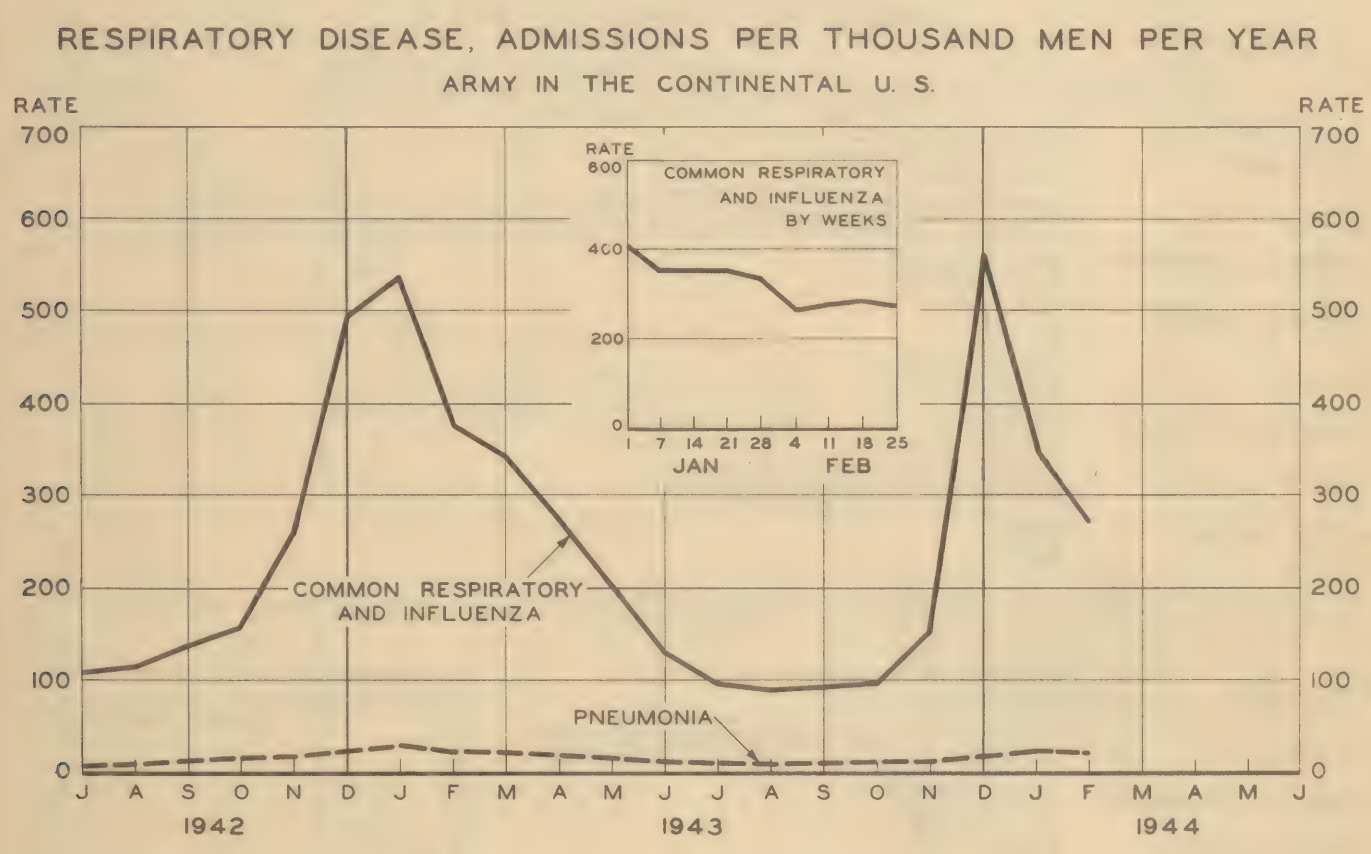


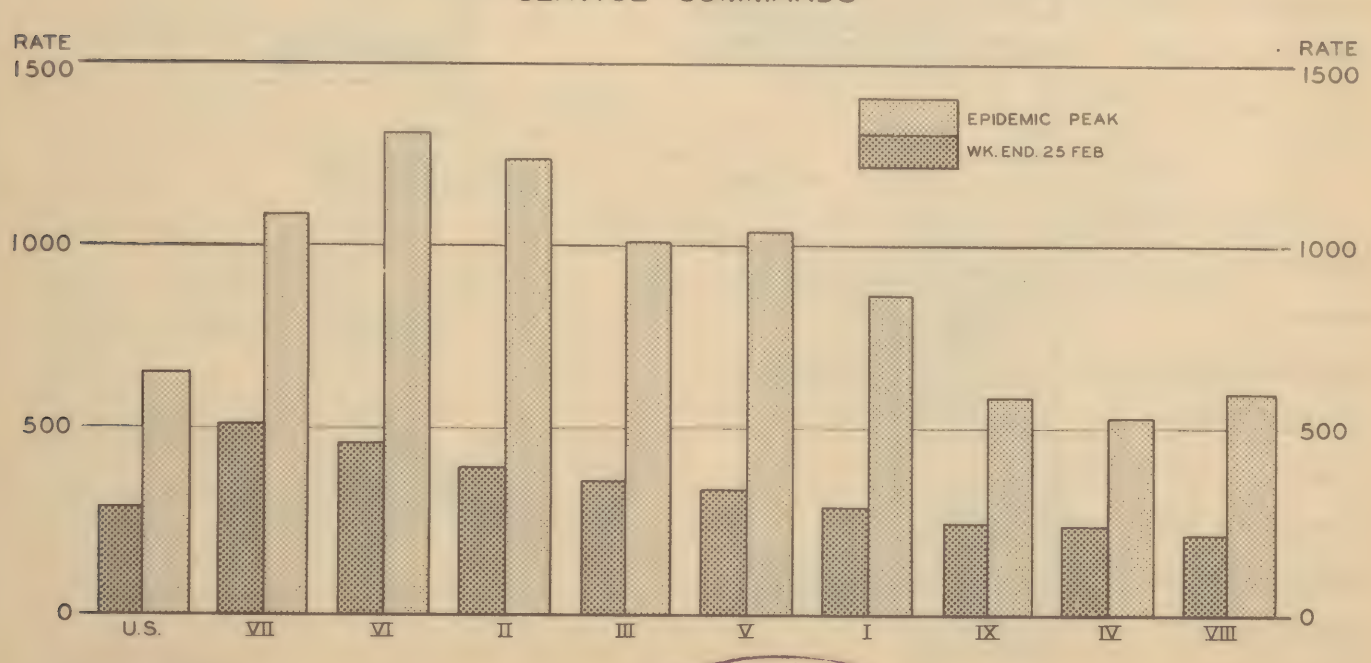
TOTAL ARMY



RESPIRATORY DISEASE, CONTINENTAL U. S.

During February the U. S. admission rate for respiratory disease declined for the second successive month, although the panel inserted in the chart below indicates that the change was confined to the first week of February, when the rate decreased sharply. In the bottom chart, which is drawn to a different scale, the highest service command rates during the recent epidemic are compared with those for 25 February, the order being that of the rates for this latest week. In four cases the peak rate was reported for the week ending 11 December 1943. In all service commands the most recent rates are more than 50 percent below their respective peak rates, and in the Second, Fifth, and First Service Commands the decline amounts to more than 65 percent.

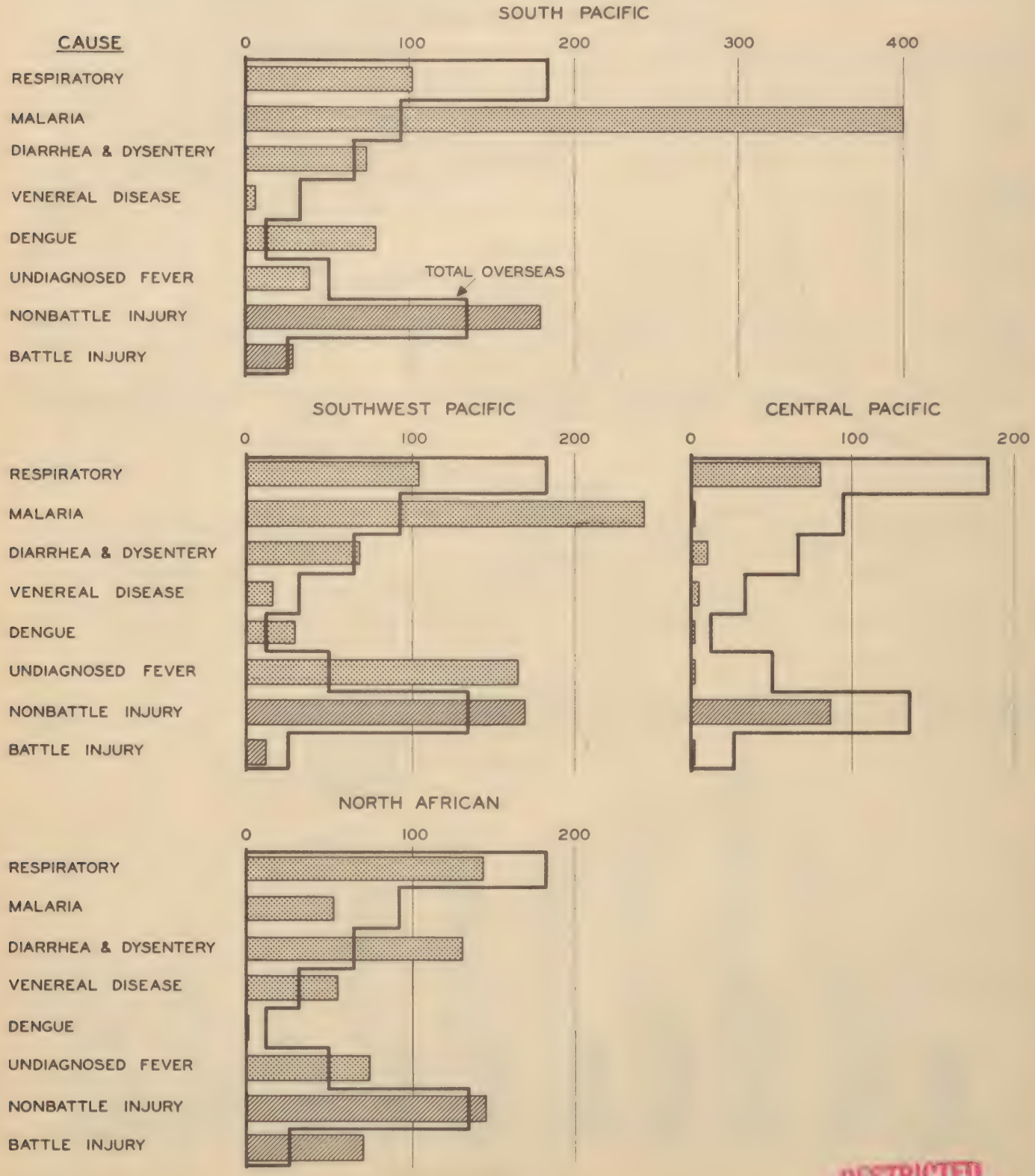




CAUSES OF ADMISSION IN 1943, OVERSEAS COMMANDS

The average admission rate for all forces overseas during 1943 was 1,048 per 1,000 men per year, or one per man per year, according to preliminary reports to The Surgeon General. For disease, nonbattle injury, and battle injury the rates were 887, 135, and 26 in that order. Only the communicable diseases are reported in any detail, but it is evident that they accounted for the major portion of the disease admissions. The leading communicable diseases were respiratory disease, diagnosed malaria, diarrhea and dysentery, undiagnosed fever, and venereal diseases, in the order named.

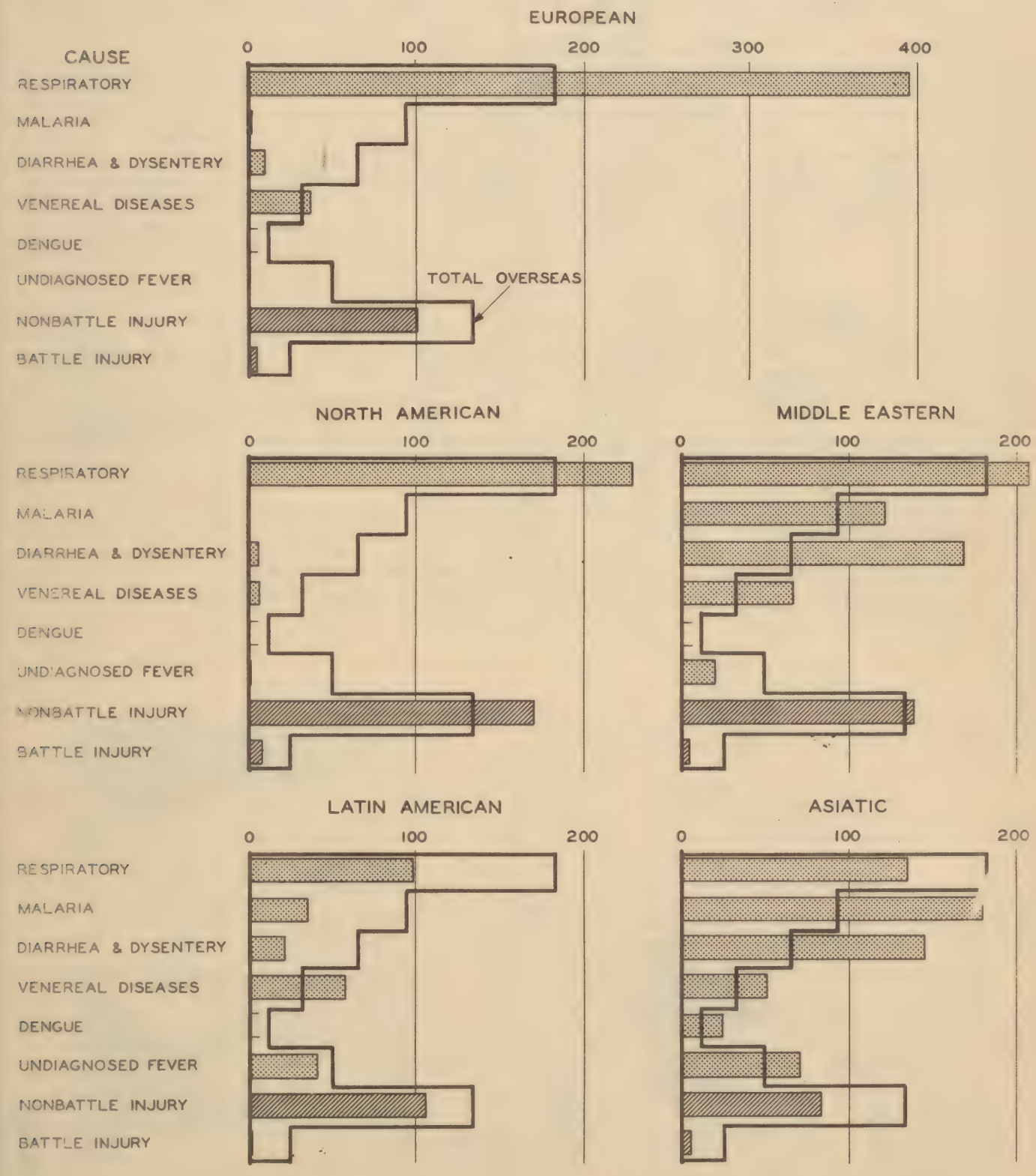
ADMISSIONS PER THOUSAND MEN PER YEAR, MAJOR CAUSES OVERSEAS COMMANDS, 1943



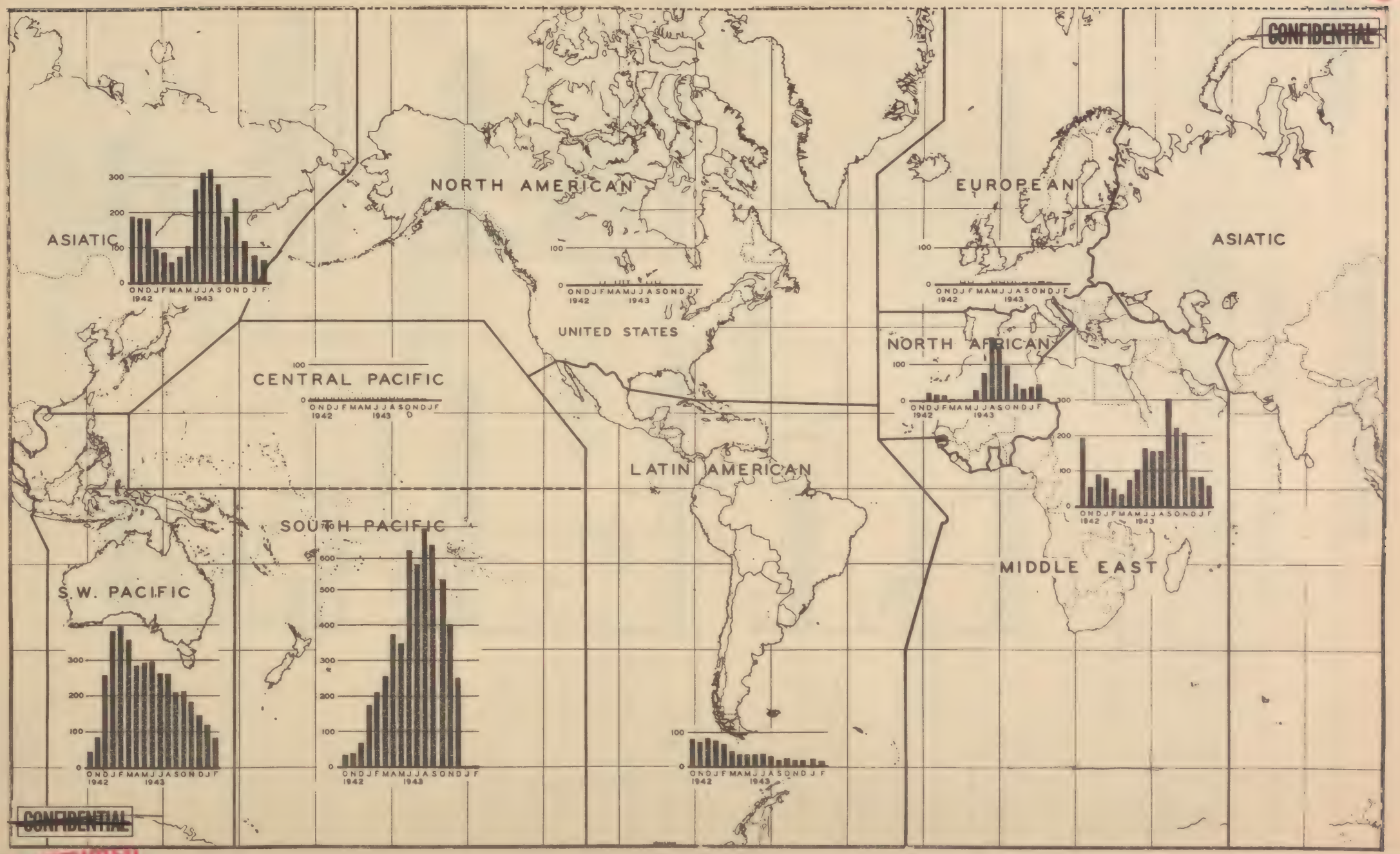
CAUSES OF ADMISSION IN 1943, OVERSEAS COMMANDS (Continued)

The theaters varied widely in their average rates for the year, and in the relative importance of the various causes of admission, as may be seen from the charts below and on the previous page. The chief causes of admission in each theater are shown there against the background of the average overseas rates for the year.

ADMISSIONS PER THOUSAND MEN PER YEAR, MAJOR CAUSES
OVERSEAS COMMANDS, 1943



MALARIA, ADMISSIONS PER THOUSAND MEN PER YEAR



MALARIA

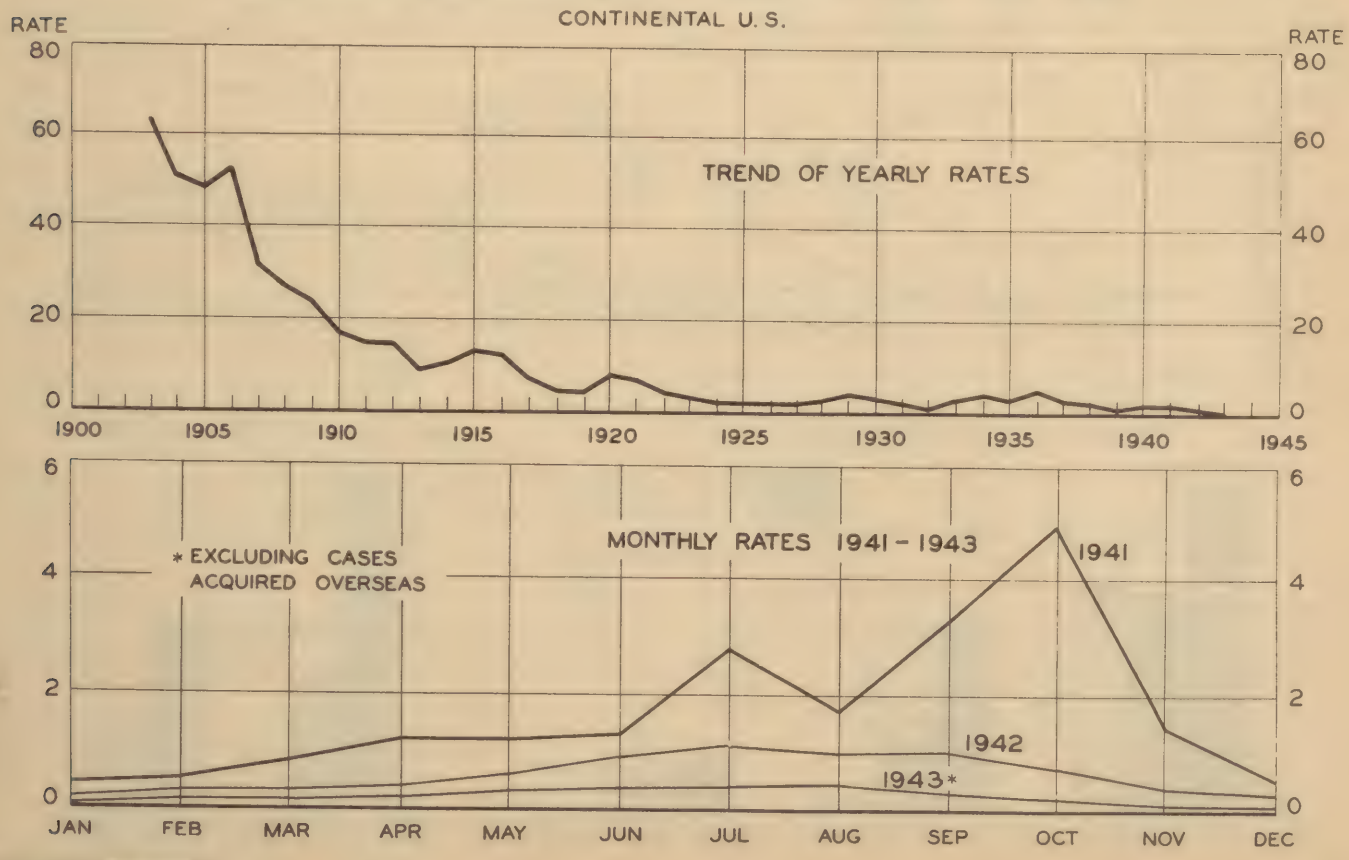
A year ago, at the conclusion of the Buna-Gona campaign, the admission rate for diagnosed malaria was in the neighborhood of 400 for the entire Southwest Pacific theater, and 950 in New Guinea. Allowance for undiagnosed malaria would raise the rates even higher. A year later, with several times as many troops concentrated in New Guinea, the theater rates are but a third to a fourth of their previous level, and the New Guinea rates an even smaller fraction, during the season when conditions favor the spread of the disease. Apparently the very heavy transmission which occurred a year ago sustained the malaria rate largely through frequent relapses on the part of men infected in New Guinea and in the South Pacific. With New Guinea now a base area, however, a vigorous anti-malarial program has evidently succeeded in reducing the rate of original infection even in this highly endemic area.

In the South Pacific the sequence of events has been quite similar. On Guadalcanal, where U. S. troops originally suffered heavily from malaria, the disease has been brought sufficiently well under control to warrant consideration of the discontinuance of suppressive atabrine. The effectiveness of the current malaria control program, and the tightness of malaria discipline in the South Pacific, are illustrated by the recent report that the 37th Division experienced only 27 cases of malaria during November in the Bougainville campaign. The exceptionally high admission rates during the middle of 1943 are attributed in large part to the attempt to de-malarialize the Americal Division and the 147th Infantry Regiment by taking them off suppressive atabrine (see HEALTH for 31 December 1943). When these units are excluded the rates are halved during this peak period.

Although definitive reports are not yet available, it seems plain that real progress has been made in the direction of effective control. As offensives move northward into less malarious or even malaria-free areas, the hazard may seem slight. However, active campaigns in the Philippines and in China and Burma will probably again expose U. S. troops to the ravages of the disease under conditions which will require unremitting vigilance on the part of all personnel if a reasonable degree of control is to be assured. In view of all that has been learned from the South and Southwest Pacific experience there is no need again to suffer the high rates of morbidity and noneffectiveness which obtained in these areas a year ago.

In the United States the 1943 admission rate for malaria was the lowest on record if the account is restricted to infection acquired in the U. S. The charts below present the recent experience in detail against the background of the trend since 1903.

MALARIA, ADMISSIONS PER THOUSAND MEN PER YEAR



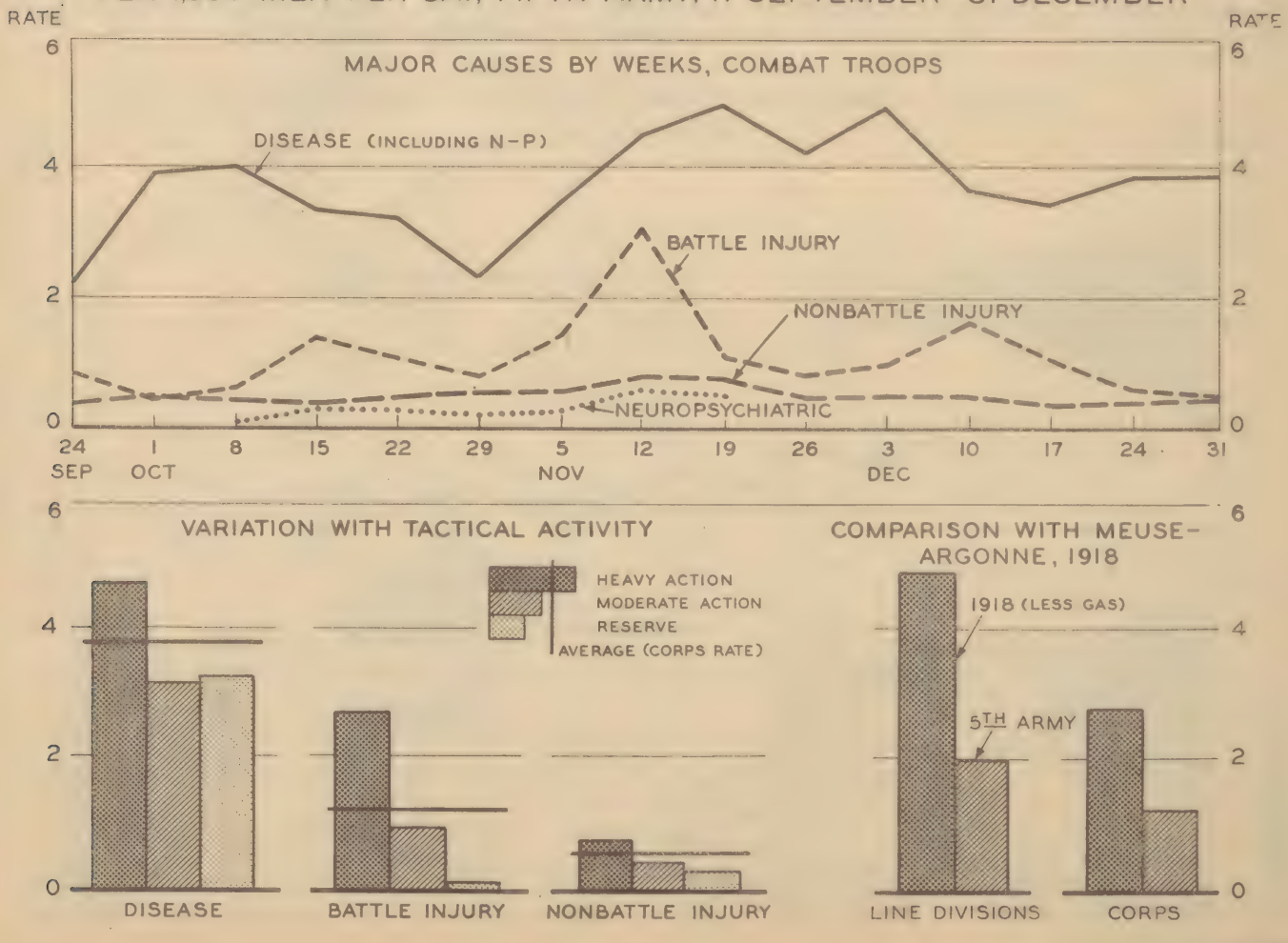
MEDICAL ASPECTS OF ITALIAN CAMPAIGN

Battle Casualties. On 9 September advance units of the Fifth Army, including the British 10th Corps, assaulted the Salerno beaches. Casualties were far less than had been anticipated. Reports covering the first two days are not available, but during the first week thereafter the U. S. Army combat units, organized under the 6th Corps, sustained 3,447 reported casualties (exclusive of those killed in action), of which 72 percent were wounded in action, 9 percent admitted for other injuries, and 19 percent admitted for disease. By 1 October, when Naples was occupied, the combat units had suffered 8,400 casualties of all kinds except killed in action, but the proportion admitted for disease had advanced to 53 percent, and that for wounded in action had declined to 38 percent. The first panel below compares these major causes of admission in the combat units by weeks from 11 September to 31 December 1943. The figures are expressed as admissions per 1,000 men per day. The bottom left-hand chart compares the average weekly experience of units engaged in "heavy" or "moderate" fighting or in reserve. Daily observations at the divisional level might have resulted in sharper contrasts than those shown. Finally, the bottom right-hand chart compares the 5th Army admission rates for battle injury with those which obtained during the Meuse-Argonne offensive in 1918, gas casualties being omitted. In comparing the divisional rates it should be borne in mind that the 1918 material was available on a daily basis, and that it excludes periods when divisions were in reserve. Daily casualty reports to the Adjutant General's Office, NATOUSA, which do not give a breakdown by divisions, yield daily rates for all the combat troops involved (the equivalent of corps rates). Excluding the first week, for which the available strength information is especially uncertain, the highest rate was about 5 battle injuries per 1,000 men per day, and the full distribution is shown in the following table for 16 September through 31 December:

DAILY ADMISSION RATES TO HOSPITAL AND QUARTERS FOR BATTLE INJURY, ITALIAN CAMPAIGN

Admissions per 1,000 Men per Day	0-.49	.50-.99	1.00-1.49	1.50-1.99	2.00-2.49	2.50-2.99	3.00-3.49	3.50-3.99	4.00-4.49	4.50-4.99
Number of Days	20	39	18	10	7	8	1	2	0	2

DISEASE, NONBATTLE INJURY, AND BATTLE INJURY ADMISSIONS PER 1,000 MEN PER DAY, FIFTH ARMY, 11 SEPTEMBER - 31 DECEMBER

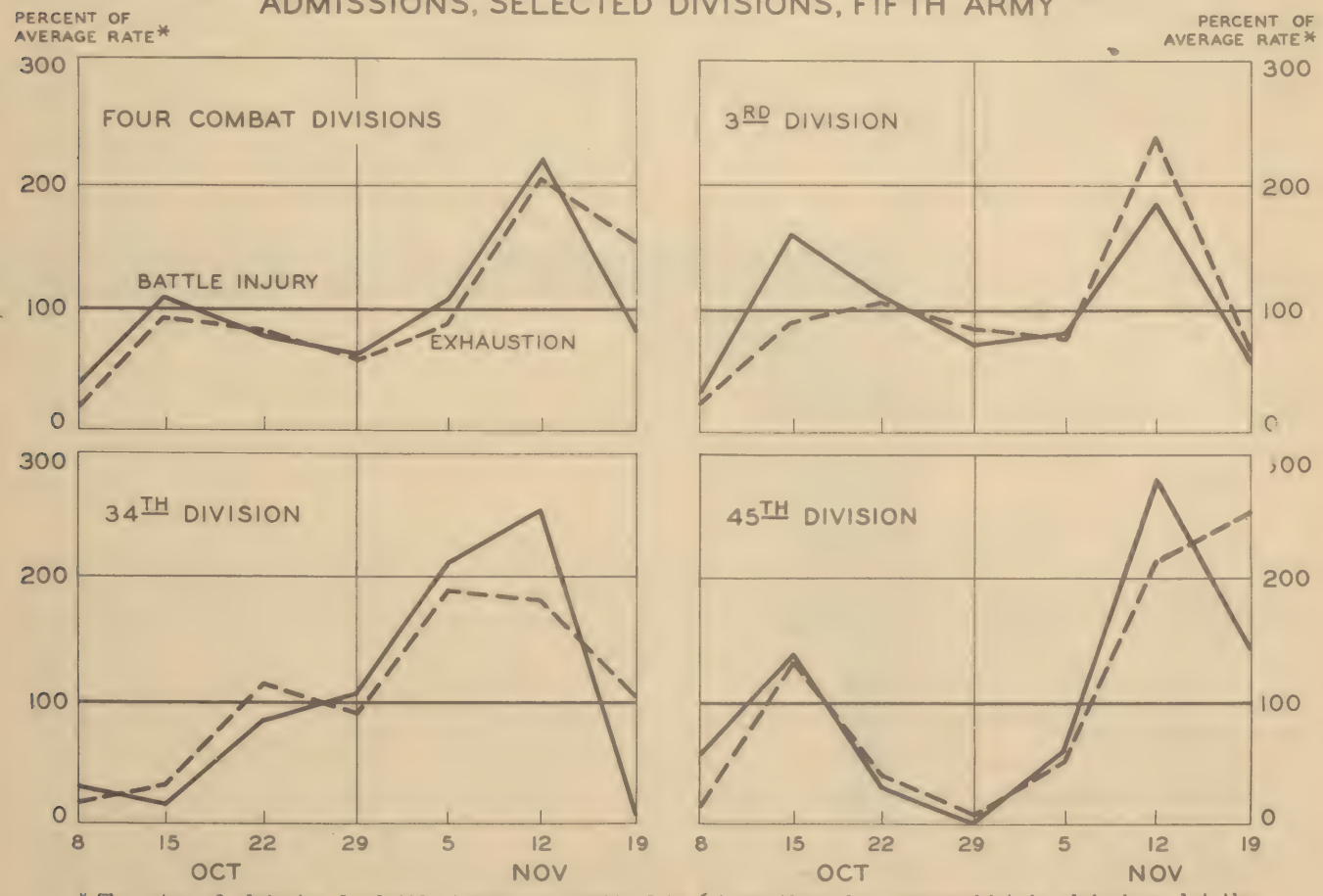


MEDICAL ASPECTS OF ITALIAN CAMPAIGN (Continued)

After the first week the highest casualty rate for any week was experienced by the 36th Division during the week ending 10 December, when it was subjected to heavy enemy artillery fire and counterattack. The average daily admission rates for the week were 7.0 per 1,000 for disease, 1.5 for nonbattle injury, and 7.3 for battle injury, or 15.8 per 1,000 per day for all causes except killed in action.

During the period 9 September to 31 December there were roughly 12,000 hospital admissions for battle injury, of which 82 percent were attributed to shells, bombs, mines, and other high explosives and 18 percent to bullets. Shells were the causative agent in 58 percent of the cases. That many lives were saved by the availability of adequate surgical facilities in the proximity of division clearing stations is clearly demonstrated by the mortality rates among the wounded. The average mortality was 3.3 percent of those admitted to hospitals with wounds, and did not differ materially from those wounded by bullets and those wounded by high explosives. The significance of this mortality rate may be better appreciated by a comparison with the World War I figure of 8.1 percent which would still be approximately twice as high as the present figure even if allowance were made for, at the most, another one-half to one percent for those who may have died after evacuation from Fifth Army hospitals. The high standard of surgical care provided the wounded is further emphasized by the unusually low mortality rate of 21 percent among the 477 cases of abdominal injuries. Here, too, there is a striking contrast with the World War I figure of 43 percent. Even more striking is the difference between the mortality rate in chest wounds in the last war, which was 24 percent, and that of 8 percent in this campaign. For other regions, the mortality rates for this campaign and for the last war were respectively as follows: head, 8.1 and 13.9 percent; face, 0.6 and 4.9 percent; upper extremities, 0.3 and 3.9 percent; and lower extremities, 1.5 and 7.3 percent. Interestingly enough, the regional distribution of the wounds for this campaign and for the last war was not materially different. There were 326 patients with self-inflicted wounds. Gas gangrene is reported to be more frequent among wounds received in the Italian operation than elsewhere, but no precise comparisons are possible at this time. The bacilli causing this infection are more likely to be present in the highly fertilized soil of the European continent than in the terrain on which U. S. troops have previously fought in this war.

RELATION BETWEEN TREND OF BATTLE INJURY AND NEUROPSYCHIATRIC ADMISSIONS, SELECTED DIVISIONS, FIFTH ARMY



* The rates of admission for battle injury are roughly 5 to 6 times those for neuropsychiatric admissions, but the two curves have been brought together by showing them as percentages of their averages for the period.

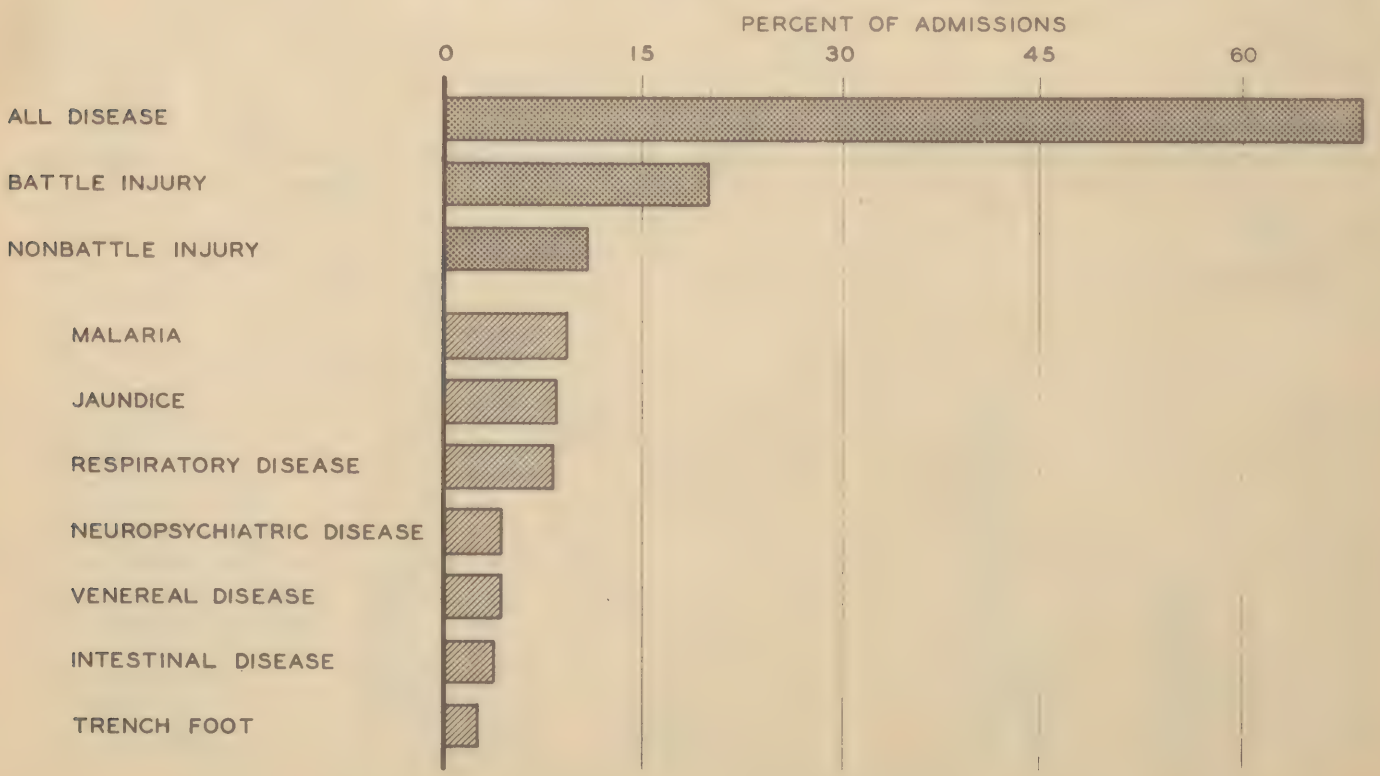
MEDICAL ASPECTS OF ITALIAN CAMPAIGN (Continued)

Neuropsychiatric Casualties. For the period 9 September through 31 December neuropsychiatric admissions occurred at about one-fifth the rate for battle injury, and represented 4 percent of all admissions to hospital. Approximately 2,700 cases were reported by clearing stations prior to 1 January 1943, almost exclusively in the combat divisions. The average admission rate for the entire interval ranged from .21 to .43 per thousand per day among the troops of the 3rd, 34th, 36th and 45th divisions, and averaged .34 for all four divisions. For the period 1 October to 19 November there are observations which give the number of cases each week for each of these four divisions. There were marked variations in the weekly incidence of neuropsychiatric admissions, called "exhaustion" cases in forward areas, which bears a direct relation to the incidence of battle injuries over the course of the two months, as may be seen from the accompanying chart. The experience reported here is limited to the four divisions. In the chart on the previous page the rates for battle injuries and for neuropsychiatric admissions are compared in index form for all combat troops and separately for the 3rd, 34th, and 45th divisions. The rates have been expressed as index numbers having as a base the average rate for the period in each case. This was done to facilitate comparison of the two sets of rates, which are of very different magnitude. The 36th Division is not shown separately because of scale, although the close correlation also holds for its experience. The fact that it was in reserve for six out of the seven weeks pulls the average down below the level expected from a review of the three panels for the other divisions. The only gross deviation from the relationship is observable during the week ending 19 November, when the neuropsychiatric index for the 45th division rose as the battle injury index decreased. About 28 percent of all neuropsychiatric admissions were returned to duty from Army Hospitals. The establishment in December of a special neuropsychiatric hospital in a forward area is expected to result in a higher proportion of admissions being returned to duty without evacuation beyond Army installations.

Admissions for Disease. For the entire period 9 September to 31 December, the relative importance of disease, battle injury, and nonbattle injury as causes of admission to hospital may be judged from the fact that 69 percent of all admissions were for disease, 20 percent for battle injury, and 11 percent for nonbattle injury. Since injured patients tend to require longer hospitalization than diseased patients, however, the noneffective rates would give more weight to injury. On 31 December 5 percent of all hospital admissions were remaining in hospital, 1 percent had died, 38 percent had been returned to duty, 43 percent had been evacuated to base areas, and 13 percent had been evacuated to the Zone of the Interior.

RELATIVE IMPORTANCE OF VARIOUS CAUSES OF ADMISSION TO HOSPITAL

FIFTH ARMY, ITALIAN CAMPAIGN, 1943



MEDICAL ASPECTS OF ITALIAN CAMPAIGN (Continued)

The chart on the previous page compares various disease-groups from the standpoint of their proportionate contribution to hospital admissions for disease. The chief causes of admission were malaria, jaundice (infectious hepatitis, reviewed in HEALTH for 31 January), and respiratory disease. Diagnoses of lesser importance than those charted below include, in the order of their numerical importance, undiagnosed fever, cellulitis, skin infections, and foot conditions (other than trench foot).

Prior to the campaign it was known that malaria would be one of the chief problems confronting the Fifth Army at the time of invasion. The landing was to be made in malarious coastal lands and at a time when the local incidence of malaria was at or near the seasonal peak. The coastal plain south of Salerno is an area of high malaria endemicity, and here Fifth Army troops met some of the stiffest fighting of the invasion. During the first two or three weeks most of the troops were thoroughly exposed to infection, and little could be done to control breeding areas during this period, but malaria control units arrived on D+12 and were equipped on D+19. Suppressive atabrine was employed, however, and atabrine discipline is said to have been satisfactory. Individual measures, including repellents, nets, and gloves, were not used too effectively, although the repellents were highly effective when used. Two of the divisions had come from Sicily, where there was considerable malaria, but the rate of admission was only 66 per thousand per year during the first week. For the next three weeks the rate increased rapidly, reaching a peak of 382 during the week ending 8 October. By 31 December, however, it was down to 38 admissions per 1,000 men per year. Most of the malaria was caused by plasmodium vivax. Experience in other theaters has shown that this type of malaria carries a high relapse rate, so that malaria may well continue to contribute to the noneffective rate even though transmission has ceased.

Although only one death from jaundice had been reported by the end of 1943, it was the second leading cause of admission for disease throughout the first three and a half months of the campaign. The invasion of Italy occurred during the period when the average incidence in the theater was rising rapidly, but the experience of the Fifth Army was perhaps no worse than that of the theater as a whole. The disease was more frequent in certain regiments than in others and is believed to have been mildly infectious. Observations in the field show that it bore no relation to the use of atabrine, to dietary factors, to yellow fever vaccine, or to upper respiratory infections.

No increase in respiratory infections was anticipated during the early weeks of the invasion and none occurred. Although the incidence has increased seasonally since cold weather set in, the rates of admission have remained surprisingly favorable. Diarrhea and dysentery have been present in Italy, but their incidence suggests fairly adequate control measures aided, of course, by the cool weather. A peak rate of 128 admissions per thousand men per year was reported for the week ending 1 October, but the December rate was about 40. Typhus fever (see HEALTH for 31 January) among civilians in Naples has presented a special hazard, but a vigorous control program has protected U. S. troops who are also, of course, immunized against the disease. Venereal disease has been a problem of serious dimensions, Naples having served as a focus of infection. Tentative rates for December show that admissions for venereal infection were higher than the theater average for December, despite the fact that the Fifth Army was on a combat assignment. The troops of the Peninsular Base Section, however, had an even higher rate than the Fifth Army, presumably because of greater contact with the civilian population, especially in the vicinity of Naples. Treatment of combat troops on a duty status has proved difficult, and it has been necessary to hospitalize a majority of the venereal patients in order to supervise the administration of therapeutic drugs.

Trench foot has been a leading cause of admission in the Fifth Army, about 1,500 admissions having been reported prior to 1 January 1944. Trench foot first appeared during the week ending 12 November, after a period of cold with continuous rain. Most patients had been in the front lines in the mountains for five to eight days with no chance to warm or dry their feet. At this time many troops were still wearing cotton socks but the light woolen sock was soon issued and unit commanders were instructed to see that men carried extra socks and that shoes and socks were changed as frequently as possible. During the second half of December, heavy woolen socks were issued to some front line troops, together with combat suits, and others received arctic clothing. Admissions increased during November and reached a peak during the week ending 10 December. For the month of December they occurred at the rate of 63 per thousand men per year, and preliminary reports suggest that the rate did not change appreciably during January. The significance of this experience is forcefully demonstrated by a comparison with the admittedly high admission rate of 68 per thousand strength which the British suffered from trench foot and related conditions in Gallipoli during the

MEDICAL ASPECTS OF ITALIAN CAMPAIGN (Continued)

crucial period of that campaign. In the December issue of HEALTH, the factors involved in the development of trench foot were presented and the effectiveness and importance of proper prophylactic measures were stressed. It was further emphasized, however, that the efficacy of these measures depends on how rigidly they are followed, which is essentially a measure of discipline and consequently a responsibility of unit commanders.

A study of the nutritional status of forward combat troops showed that when the tactical situation is such that transportation and supply are difficult, and infantry troops must be kept in action for long periods of time, the C and K rations tend to be used for longer periods than they were designed to cover. Under these conditions they become unpalatable and tend to be consumed in insufficient amount to maintain proper nutrition. A decrease in weight and other clinical signs usually associated with malnutrition were observed among the troops of the Fifth Army and suggested that the ration was inadequate during the first months of the campaign. Efforts are being made to improve this condition by furnishing troops with the regular overseas ration, supplemented with any available fresh foods, as soon as the tactical situation permits. It is believed that the new 10 in 1 ration will be much superior to the C or K ration for emergency use.

Hospitalization and Evacuation. During the first few days after the landing at Salerno, the sick and wounded were rapidly evacuated from the beaches to troop transports and IST craft, and large transport ships afforded facilities for definitive treatment. On day D+3 the first evacuation hospital was ready to receive patients. By D+7 there were 1,556 beds available and 1,128 patients awaiting evacuation. Additional hospital ships were requested in order to accomplish evacuation to North Africa, and the policy of holding patients was controlled by the availability of empty beds. Although the number of battle casualties to be cared for fell short of expectation, admissions for disease exceeded planning estimates. By D+8 there was some air evacuation, but it was necessarily somewhat uncertain. On D+12 all Army medical units reverted to Army control. Three evacuation hospitals were operating 1,644 hospital beds for the Fifth Army, a fourth was in bivouac, and two additional units had just arrived. A total of 858 patients were hospitalized. Although battle casualties were fewer than anticipated, admissions for disease were increasing rapidly and expansion equipment was issued to one evacuation hospital. Efforts were made to balance admissions against the number of patients evacuated, returned to duty, or otherwise disposed of each day, but patients with the longest hospital expectancy were chosen for evacuation to North Africa while hospital facilities were limited. By 10 October convalescent and field hospitals had arrived from North Africa. During the entire period, 9 September to 31 December, 20,820 U. S. patients were evacuated to North Africa, 47 percent by air and the rest by ship. The total number who had been hospitalized in U. S., British, and other hospitals attached to the Fifth Army, was 99,000.

Summary. The history of the Italian Campaign up to 1 January 1944 gives evidence of careful planning, of good coordination between Army and Navy units, and of exceptionally good surgical care of battle casualties. Indeed the unusually low mortality rate among the wounded is one of the medical highlights of the campaign and, for the number of casualties involved, sets a record in military history which clearly reflects the high standards of surgery in this organization. Hospitalization and evacuation appear to have been handled skilfully despite great handicaps, especially during the initial phase of the operation. Except possibly during the initial week the casualty experience is far more favorable than had been anticipated and does not begin to compare with the heavy fighting in 1918. It may prove a misleading guide to future operations. Neuropsychiatric casualties were no higher than might have been anticipated. Sanitation was reasonably good, and respiratory diseases did not take an excessive toll, but the total rates for disease were high and jaundice, trench foot, malaria, and venereal disease were outstanding medical hazards over which it proved difficult to exercise sufficient control.

COCCIDIOIDOMYCOSIS

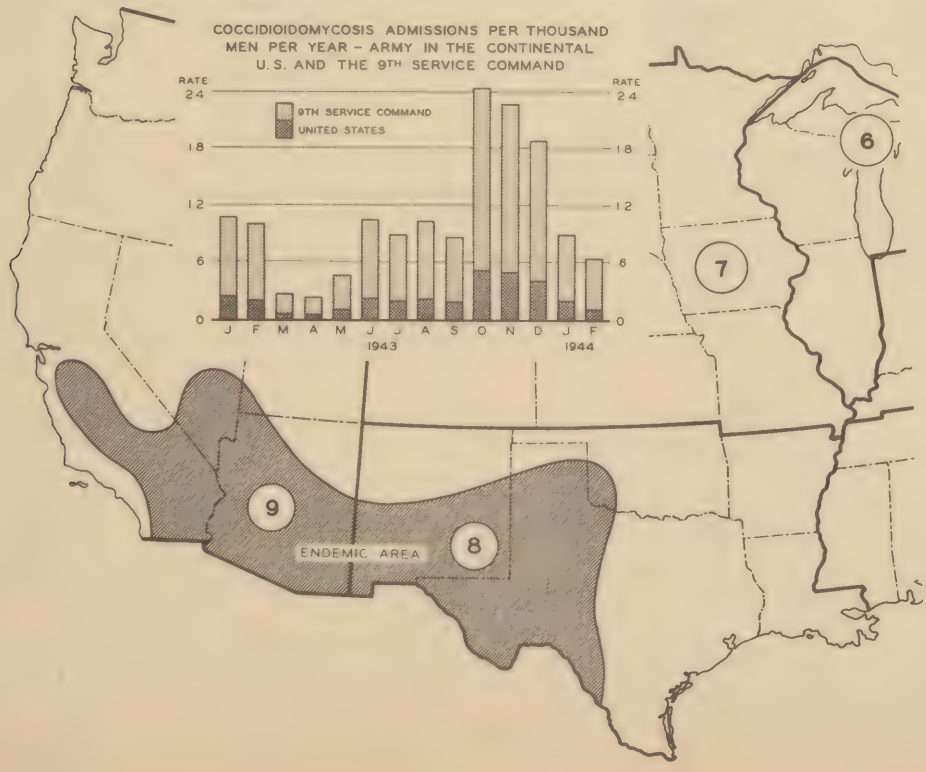
This disease is a fungus infection occurring in portions of the arid southwest very roughly indicated by the shaded portions of the map below. It is transmitted by inhalation of the spores of the causative fungus which are present in dust in the endemic regions. It should not be inferred that coccidioidomycosis exists throughout the shaded region; its distribution is very spotty and, except for the San Joaquin Valley of California, most of the endemic areas appear to be quite small in extent. However, the location of these areas is not yet well established. The seasonal distribution of the disease is determined by the amount of rainfall, the incidence being much higher in the dry seasons. The inset on the map shows that most of the cases in 1943 occurred during the fall and winter.

It might be assumed that military forces should find it easy to avoid this infection. However, the endemic regions are generally also the most nearly ideal regions for flying, chiefly because of their almost continuously clear weather. They also serve admirably for desert training of ground force troops. Military necessity has therefore dictated the extensive use of these regions by large numbers of air force units and a lesser number of ground force organizations, only areas known to be heavily infected being avoided. Certain of these areas have only been discovered through the appearance of the disease among troops or by observing positive reactions to the coccidioidin test in troops previously bivouacked or stationed there. Recently a number of cases have been diagnosed in non-endemic areas, particularly on the east coast. These have occurred among soldiers transferred from an endemic area during the incubation period of the disease.

Benign acute coccidioidomycosis is a disease which resembles mild influenza in its symptoms and in which the lesions are limited to the lungs. The majority of cases recover completely in a few weeks. Occasionally, however, dissemination or the development of progressive secondary lesions follows. The disease is rarely fatal. It owes its military importance to the rather long period of hospitalization required and to the resulting contribution which it makes to the noneffective rate. There were 1,200 cases reported in 1943 but the difficulties of recognition are such that many cases undoubtedly were not reported.

The Commission on Epidemiological Survey of the Army Epidemiological Board has conducted extensive investigations of coccidioidomycosis with the aid of medical officers attached to units in the endemic region. In 1942 the Army Air Forces Western Flying Training Command developed a comprehensive control program. The Surgeon General has taken steps to keep forces assigned to the general endemic area informed of the location of foci of infection as they are identified. Diagnostic aids and consultant services are provided

COCCIDIOIDOMYCOSIS IN THE UNITED STATES



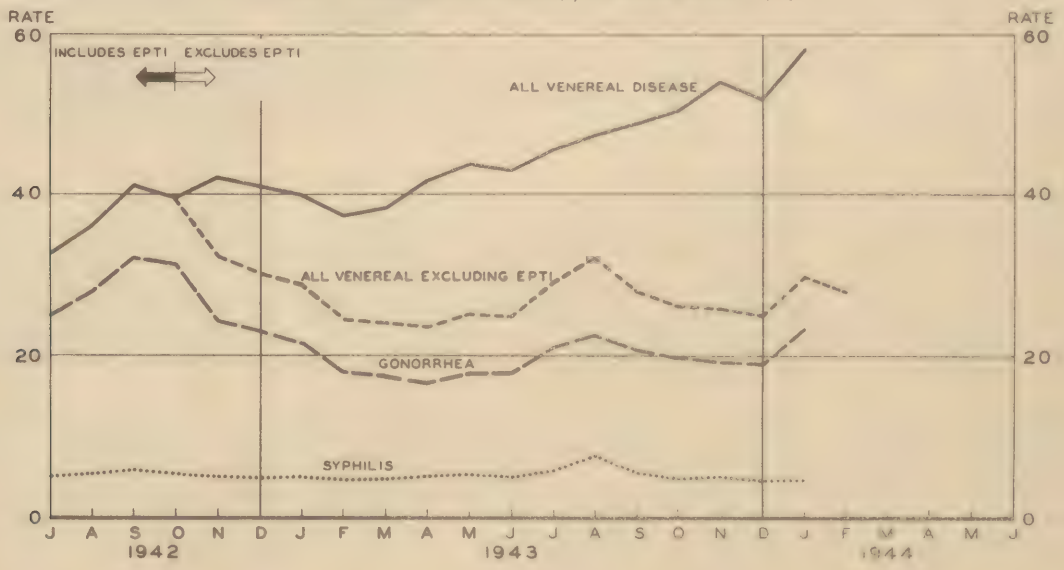
VENEREAL DISEASE, CONTINENTAL U. S.

During 1943 admissions for venereal disease among troops in the U. S. increased considerably because of the policy of inducting infected men. The top line of the chart below traces the course of the gross admission rate among all U. S. personnel, which rose sharply in January. The lines below it show corrected rates, derived by excluding the admissions of men infected prior to entrance into the Army, for all venereal disease, for gonorrhea, and for syphilis. The preliminary rate for February is slightly lower than that for January.

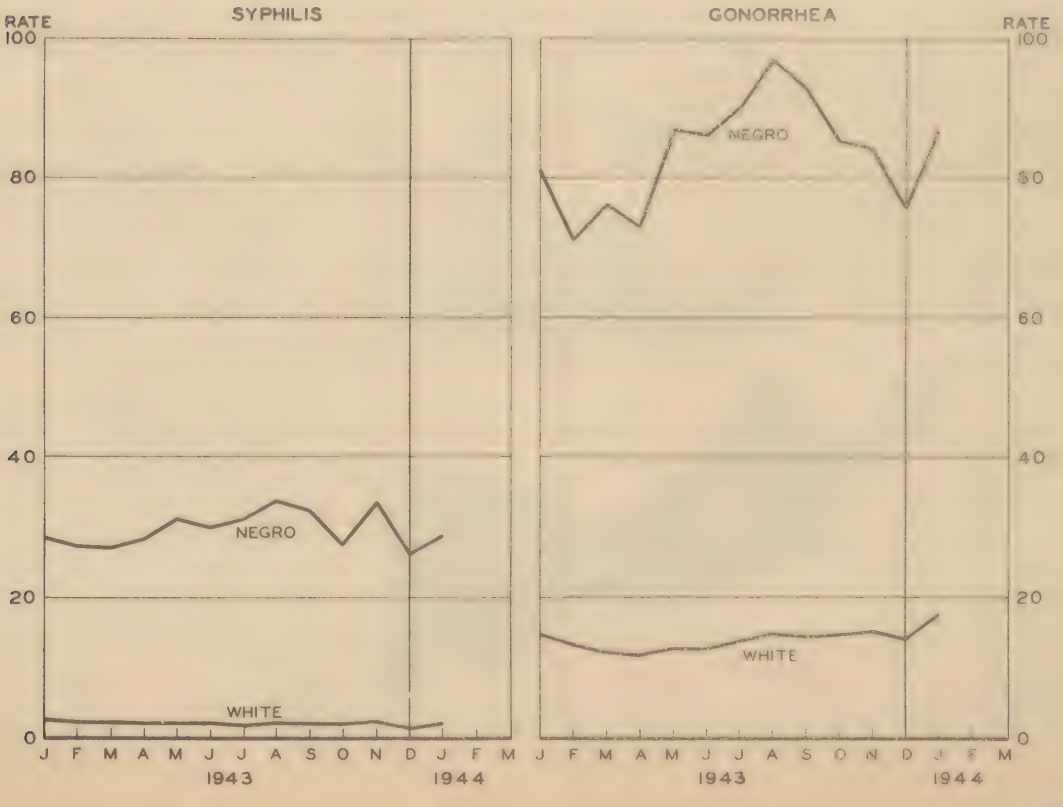
The charts at the bottom of the page give the admission rates for white and Negro troops in the Continental U. S. They show how constant the rates are for whites, and how much higher the rates are for Negro troops. Rates for both whites and Negroes increased abruptly during January, but the relative increase was greater for white troops, for whom the rate was higher than during any month in 1943.

VENEREAL DISEASE, ADMISSIONS PER THOUSAND MEN PER YEAR

WHITE AND NEGRO TROOPS, CONTINENTAL U.S.



BY COLOR

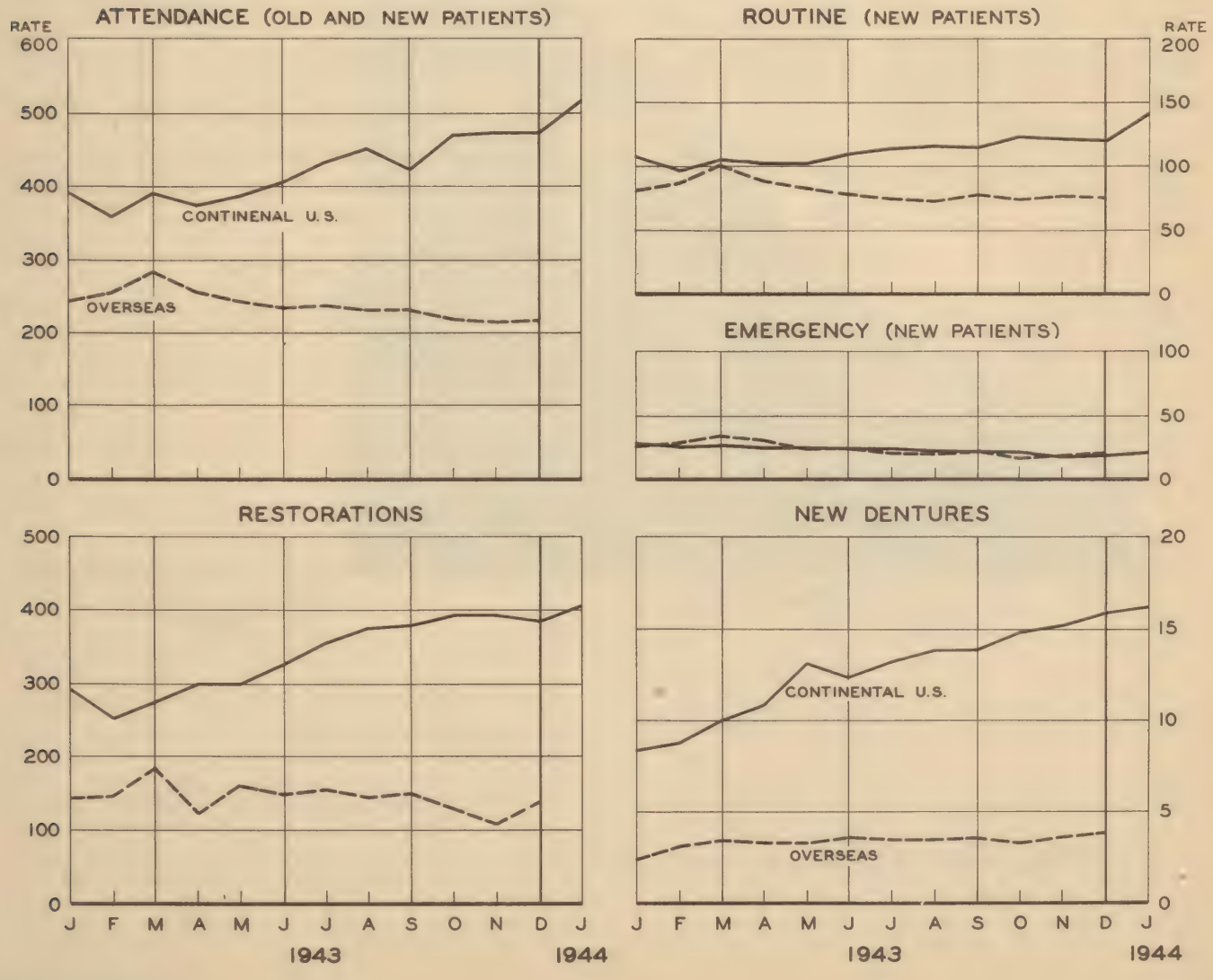


DENTAL ADMISSIONS AND TREATMENTS

The number of restorations (fillings) and new dentures per 1,000 men in the Continental U. S. has increased very markedly since January 1942, when the rate was only 164 per month for restorations and 2 for dentures. Dental needs have, of course, been multiplied by the induction of men requiring dental rehabilitation to fit them for active duty. However, the increased number of dental officers, as well as other personnel, the working of double shifts in many dental clinics, and the greater availability of equipment and supplies have all contributed to the greater output and efficiency. Approximately 400 restorations and 16 new dentures were being made for each 1,000 men each month in the Continental U. S. at the close of 1943. The rate of restoration in this country will no doubt rise as fewer men are inducted and as more troops are sent overseas. The number of dental officers per 1,000 strength will gradually rise in the Continental U. S. as the service commands are depleted of troops, and a more complete dental service will thus be possible. A large percentage of the dental caries have gone untreated during 1942 and 1943 because the actual emergency requirements were too great. Dental attendance in general has likewise increased in the Continental U. S. and for the reasons given above. The rate of attendance has advanced from 318 per 1,000 men per month in January 1942, to 516 during January 1944. More appointments naturally make possible more restorations, prosthetic appliances, prophylactic treatments, and other dental work.

Overseas there has been little change in the rates for restoration and for new dentures, shown graphically below. Average attendance has even declined slightly. It is expected that the great volume of dental work being accomplished in the U. S. will make unnecessary some of the dental work which might otherwise have to be accomplished overseas. Rates of attendance and for routine admissions overseas may, therefore, decline.

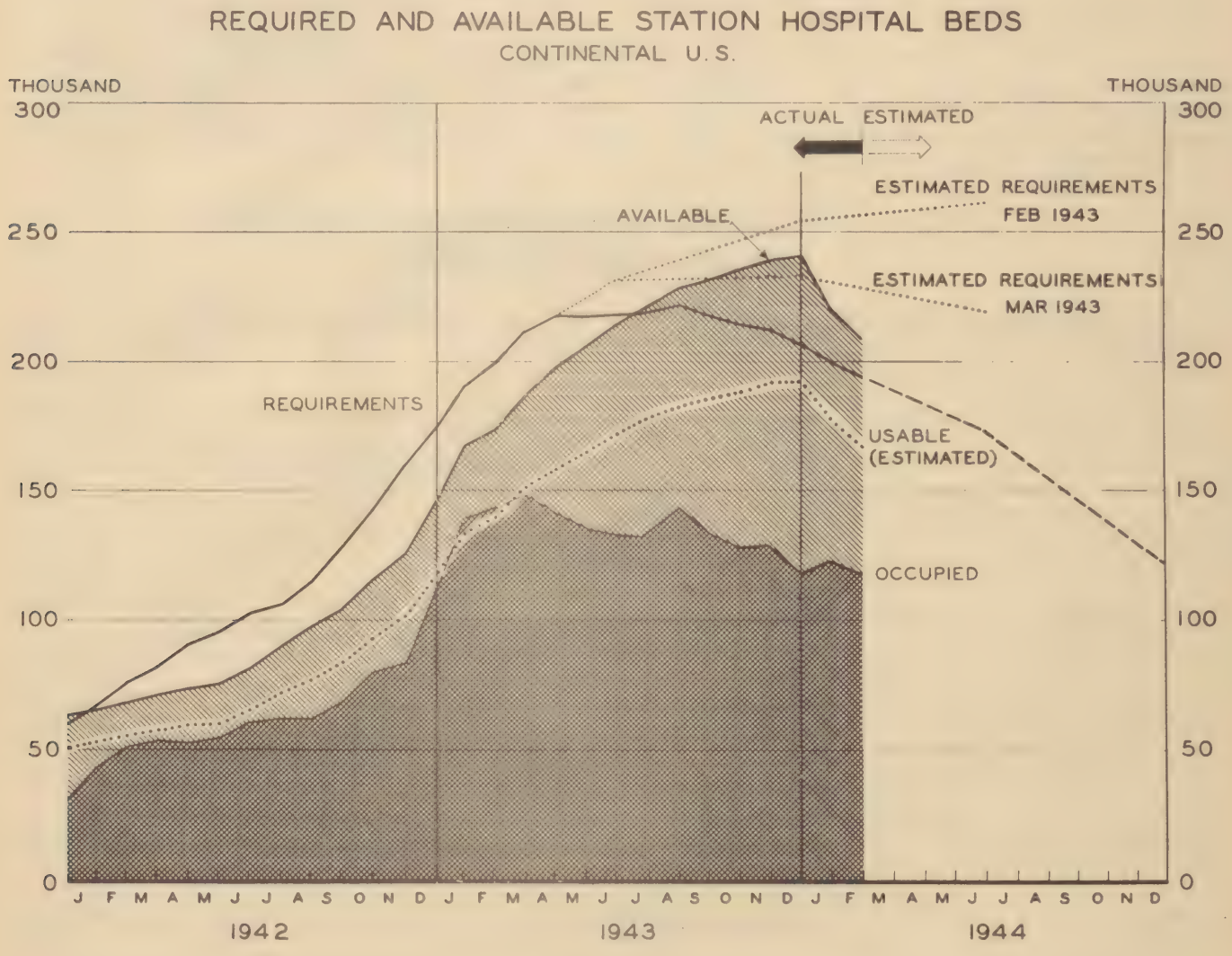
DENTAL ATTENDANCE, ADMISSIONS, AND TREATMENT
PER 1,000 MEN PER MONTH



UTILIZATION OF AND REQUIREMENTS FOR BEDS IN STATION HOSPITALS

The requirements for normal beds in station hospitals in the Continental U. S. are calculated on the basis of 4 percent of the strength of the troops to be stationed there, with an allowance for prisoners of war which adds 7,000 beds to the calculated requirements for 1 March. The requirements computed from present strengths, however, differ materially from those which guided planning a year ago. By the end of 1944 it is estimated that only 122,000 normal station hospital beds will be required.

In view of the steady lowering of estimated requirements, efforts have been made to liquidate the surplus which inevitably resulted from a building program geared to the original estimates of need. At the end of December the estimated surplus was roughly 35,000 normal beds. By the end of February it had been reduced to about 16,000 beds. At that time there were 208,000 normal beds reported as available, only 56 percent of which were occupied. The occupancy rate has remained low not only because of the surplus, but also because of the very favorable health trend currently enjoyed by troops in the U. S.

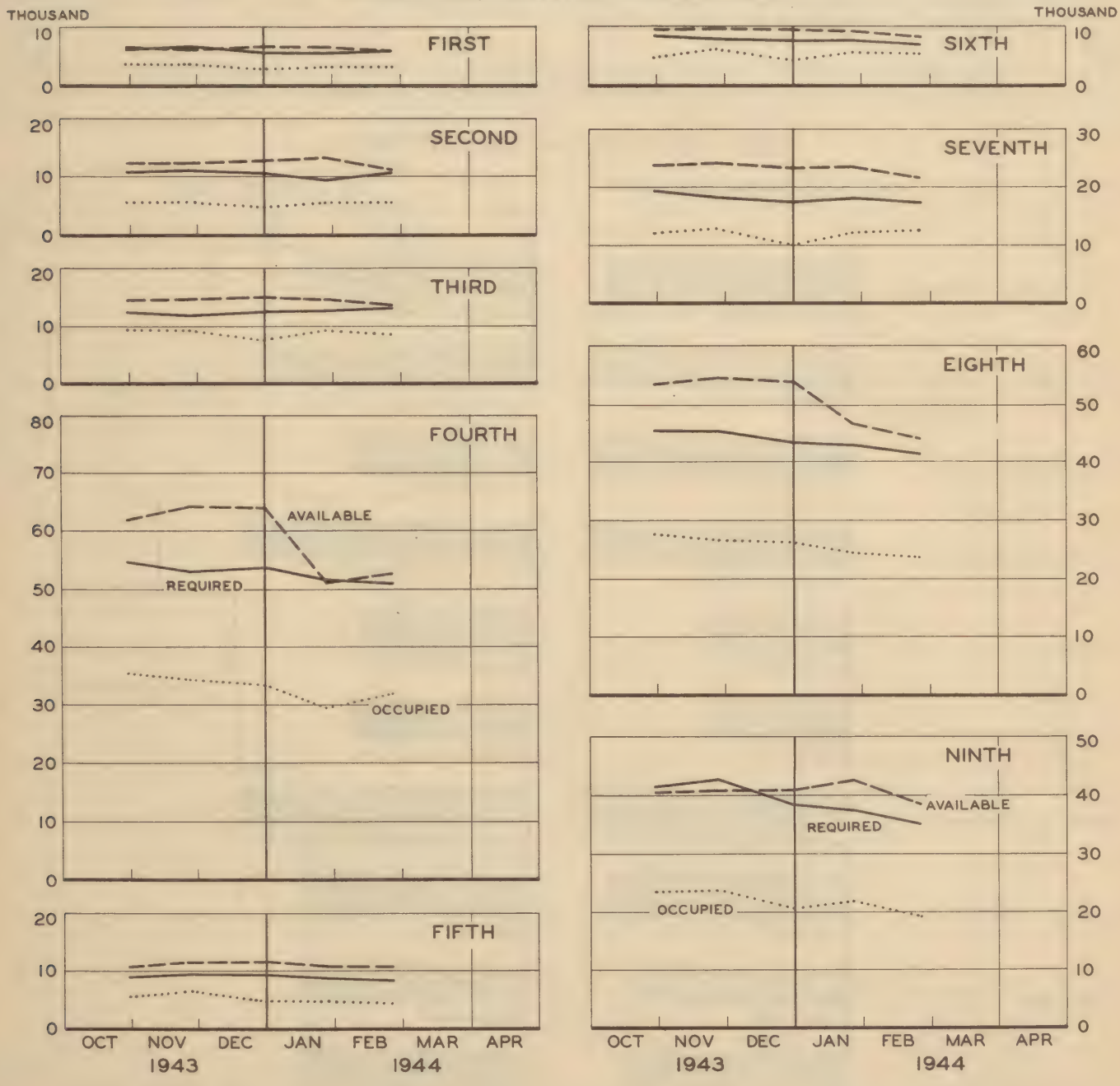


STATION HOSPITAL BEDS, SERVICE COMMANDS

In the charts which follow the requirements for normal beds in station hospitals within the geographical limits of each service command have been estimated at 4 percent of reported strength, including troops in maneuver areas, with an allowance for prisoners of war. The normal beds available and the total beds occupied are taken from the weekly statistical reports to The Surgeon General, and exclude both beds and patients in the maneuver areas, where the facilities are primarily numbered units.

The considerable changes revealed on the previous page evidently derive from the 4th and 8th Service Commands, in the main, where bed counts have been sharply curtailed in accordance with recent directives to bring the number of beds into line with falling strengths. Inclusion of strength in maneuver areas may work to the advantage of the 9th Service Command if the troops there have home stations in other service commands. On a relative basis, the greatest excess of normal beds was reported in the Fifth and Seventh Service Commands, where the beds available were about 25 percent above the calculated requirement for the end of February.

STATION HOSPITAL BEDS AVAILABLE, REQUIRED, AND OCCUPIED, SERVICE COMMANDS

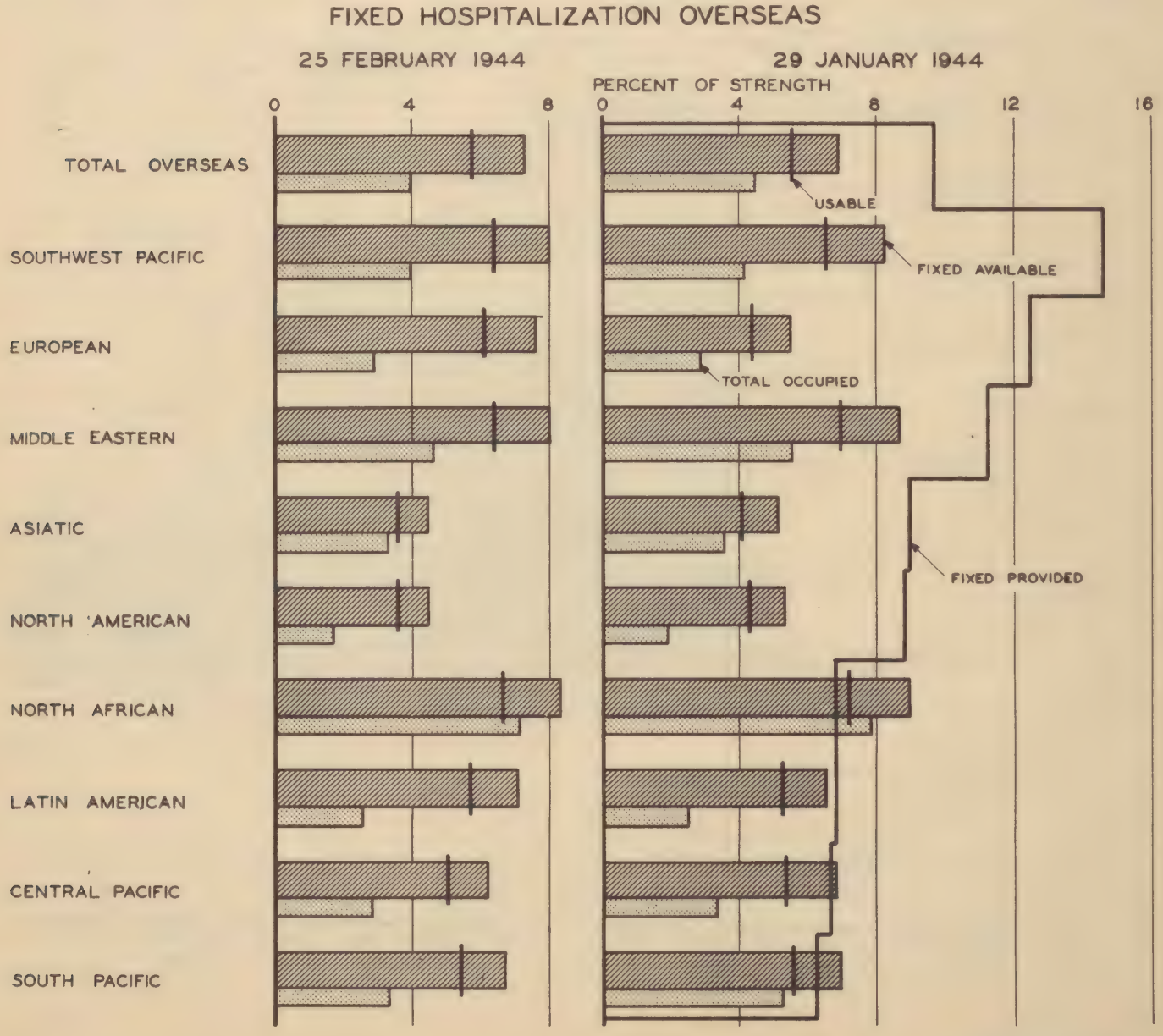


HOSPITALIZATION OVERSEAS

The chart below and to the left shows, for each theater, and as a percentage of the U. S. Army strength there, the number of beds in fixed hospitals reported as available on 25 February 1944, and the total number of patients hospitalized in the theater on that date. The second panel of the chart gives similar information for 29 January with the addition of the number of fixed beds provided up to 1 February 1944, the latest date for which such information is available. Patients in both mobile and fixed units are counted because it is essential that there be sufficient fixed beds to care for all patients requiring hospitalization.

The theaters are ranked according to the percentage of fixed beds provided as of 1 February. The facilities in North Africa continue to be crowded as manifested by the fact that more beds were reported as occupied on 29 January than there were usable fixed beds available. This suggests that it may have become necessary to use mobile units as fixed hospitals. It should be borne in mind that any particular fixed hospital will show signs of crowding when 80 percent of its beds are occupied, so that up to 20 percent of the fixed beds available should properly be discounted in planning. For this reason 80 percent lines have been drawn across the bars representing beds available. The number of beds occupied in the South Pacific declined considerably in February. Although there was only a margin of .3 percent of strength between total occupied and fixed usable beds as of 29 January, this margin had increased to 2.1 percent one month later.

The term "provided" is used to denote facilities earmarked for shipment, in transit, and in storage in the theater, as well as those actually ready for use.



HOSPITALIZATION OVERSEAS (Continued)

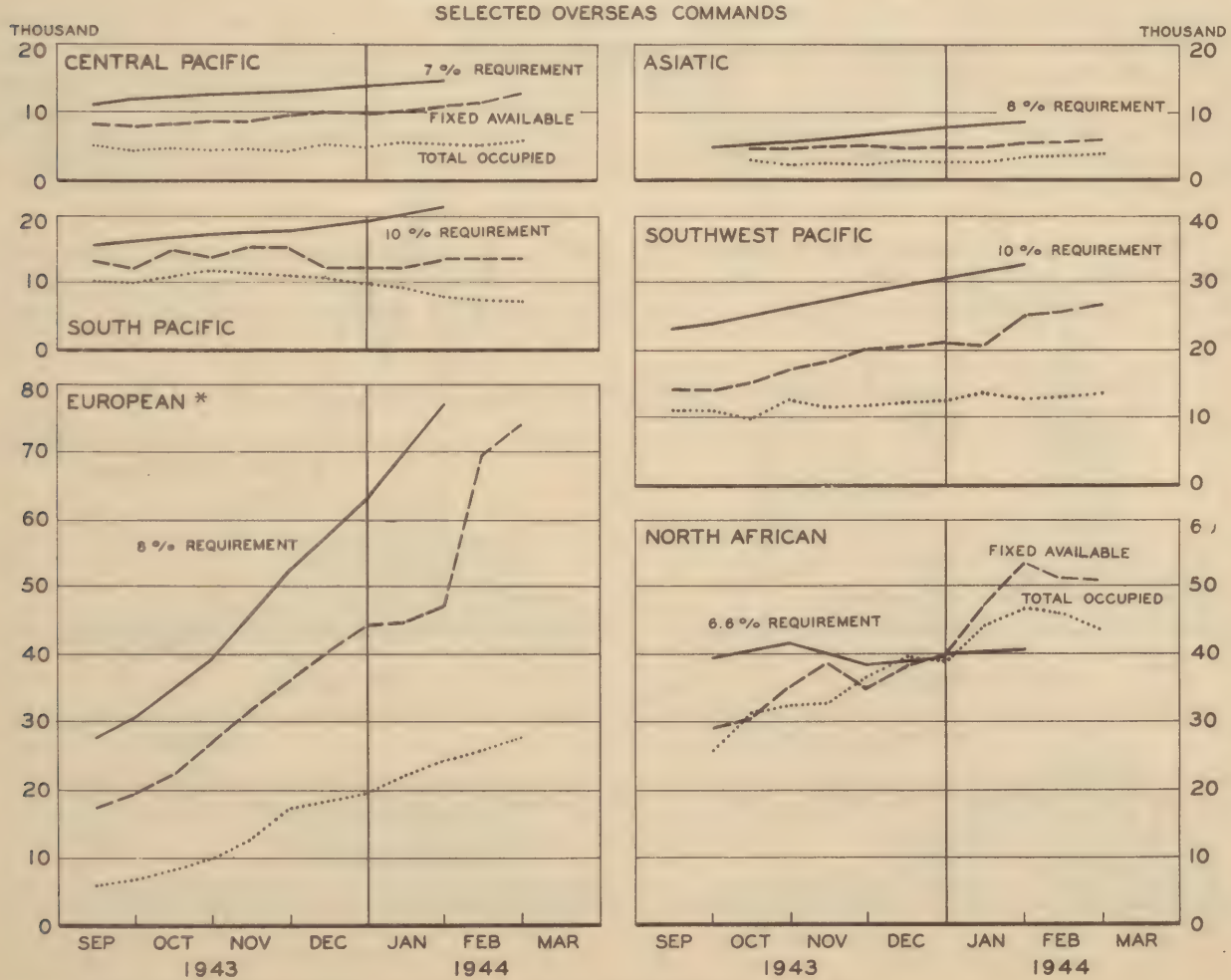
In comparison with the 5 percent of strength now provided in the United States for station plus general hospitals, some overseas theaters require 10 percent or more in fixed beds alone (those in station, general, and field hospitals). Estimates of need must take into account not only combat activity, but also the probable incidence of disease and nonbattle injury, and provisions for evacuation of patients needing extended periods of hospitalization or special treatments. In the Asiatic Theater special provision is made for hospitalization in support of Chinese units in India excluded from the strength.

The panels below detail the recent changes in fixed hospitalization in some of the major or more active theaters. The data are given in absolute form, not as percentages of strength, and each panel carries a requirement line, based upon a strength factor of 6 to 10 percent, depending upon the current level of authorization for fixed bed units. Over and above the authorization for these units, use of expansion equipment is authorized to the extent of an additional 50 percent. However, the use of such facilities necessitates a degree of utilization of personnel not intended by tables of organization and must be regarded as an emergency measure. The requirements shown for the Asiatic Theater are those for hospitalization of American troops only. Crowding of facilities continues in North Africa, where total occupied beds have exceeded usable fixed beds since September, when the present series starts. During February a slight decline in the number of beds occupied somewhat alleviated the situation. However, since bed occupancy is now 7.9 percent of strength, it would appear that the 6.6 percent requirement in fixed units in North Africa is insufficient to provide hospitalization for all patients without continued resort to expansion equipment or the use of mobile as fixed units. The arrival of some 27,000 fixed beds in the European Theater during February left the theater only some 2,900 beds short of the requirement as of the end of January.

The data on available and occupied beds are drawn from telegraphic reports, while those on requirements are taken from official A.G.O. strength figures which are more complete than those of the telegraphic reports used on the preceding page and to which beds available and occupied were related.

BEDS REQUIRED IN FIXED UNITS, FIXED BEDS AVAILABLE AND TOTAL BEDS OCCUPIED

SELECTED OVERSEAS COMMANDS



* Iceland omitted from September and October points for beds available and occupied.

UTILIZATION OF PERSONNEL IN NAMED GENERAL HOSPITALS

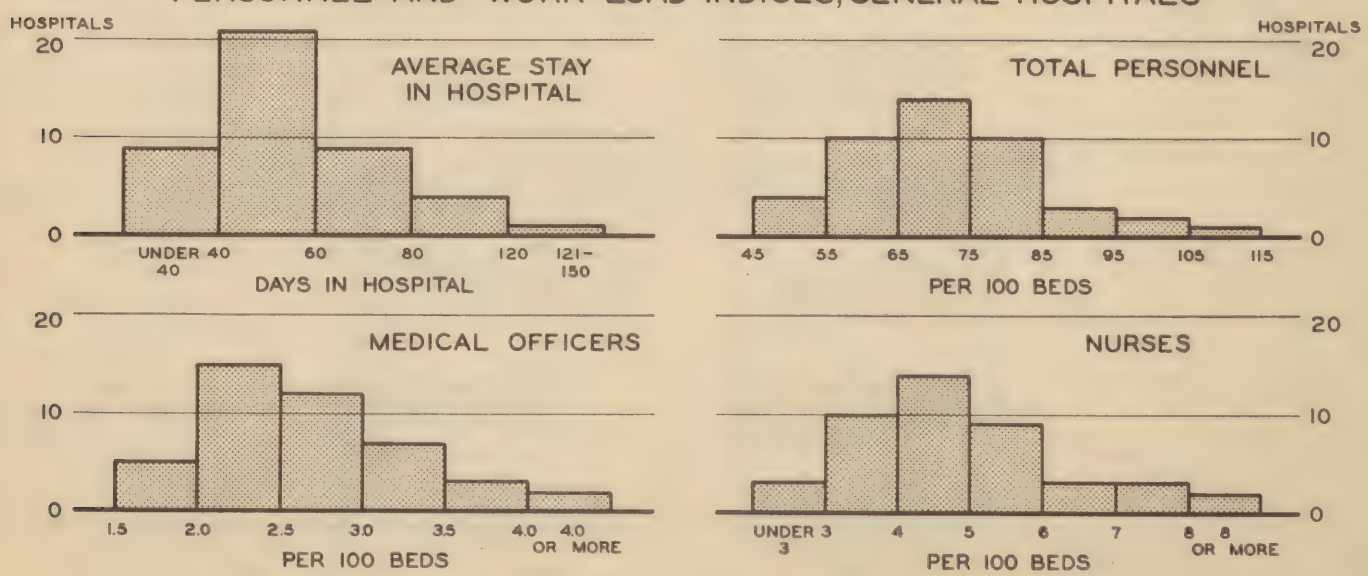
The patient census in named general hospitals on 31 December was approximately 50,000. It is expected that this figure will increase to 130,000 or 140,000 as large numbers of overseas patients are evacuated in consequence of new major operations overseas. The efficient operation of general hospitals, especially with regard to the utilization of scarce medical personnel, is thus a matter of primary concern. On 31 December there were approximately 2,000 Medical Corps officers and 3,650 Army nurses in 44 general hospitals, excluding receiving and evacuation hospitals. The efficiency of hospital administration cannot be quantitatively measured with entire satisfaction, but certain ratios of personnel to beds and patients can prove helpful. The indices which may be formed from present reports to The Surgeon General are necessarily approximate because of certain inaccuracies in reports from the field, but the general picture which they reveal is considered to be reliable.

The efficiently administered hospital discharges patients promptly upon the completion of treatment. It is dangerous to release patients prematurely but it is poor policy to hold them after the point when they are ready for duty or for discharge. The top right-hand panel below shows how variable were the estimates of average length of stay on the part of general hospital patients in December. The index employed is only approximate, but it suggests that many hospitals may be holding patients longer than necessary. More refined estimates of duration of hospitalization should shortly be available for yardstick purposes.

At the end of December about 60 percent of the (total) beds in general hospitals were occupied, or about 75 percent of their maximum desirable level of occupancy. Since the percentage of occupied beds is expected to rise sharply, any measure of personnel utilization has limitations. However, it does seem clear that, if the anticipated evacuee load does develop, it will be necessary to increase the total operating personnel in general hospitals if the recommended manning tables of The Surgeon General are to be followed. The top right-hand panel shows that most hospitals had less than 75 total personnel per 100 total beds in comparison with 80 provided by the manning tables. On the other hand, some hospitals reported more than 85 total personnel per 100 beds, and reductions at these installations may be in order. The bottom left-hand panel gives the distribution of hospitals according to the number of doctors per 100 total beds on 31 December, 1943. Many hospitals had fewer than the 2.5 Medical Corps officers per 100 beds considered desirable. Fuller utilization of facilities at these installations will require the assignment of additional doctors if the standard is to be maintained. The bottom right-hand panel presents comparable data for nurses in general hospitals. The standard recently established by the Deputy Chief of Staff calls for 6.7 nurses per 100 beds in Z/I hospitals. Since a distinct minority of hospitals reported as many nurses as 6.7 per 100 beds on 31 December, it is plain that substantial increases in the utilization of general hospitals will result in a marked deficiency of nurses if new sources of supply are not found.

Study of the details behind these and similar distributions indicates marked variation both within and among service commands. Action has been taken to inform the service commands of these discrepancies with a view to improving the present allocation of medical personnel.

PERSONNEL AND WORK-LOAD INDICES, GENERAL HOSPITALS



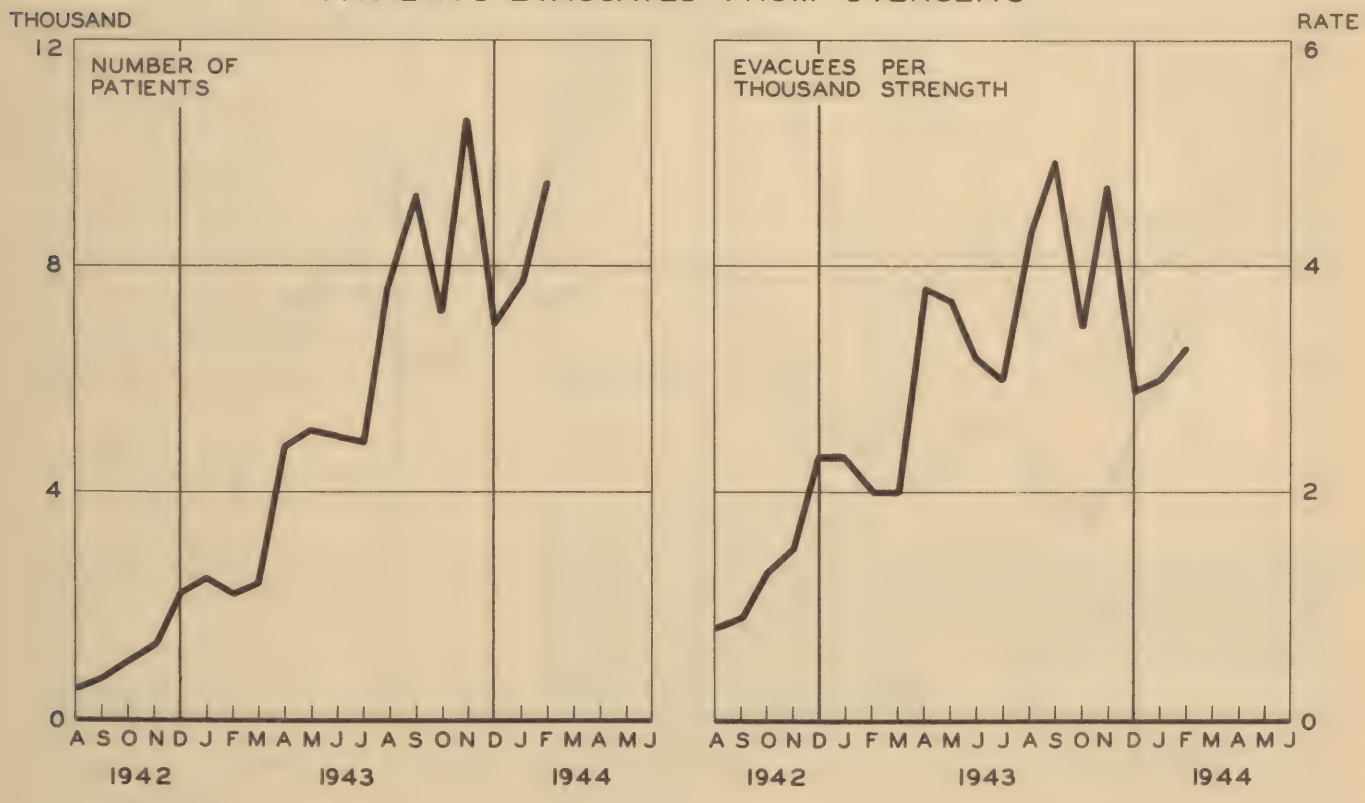
EVACUATION OF PATIENTS FROM OVERSEAS

The rate of evacuation from overseas advanced to 3.3 per 1,000 overseas strength during February, about 9,500 patients having been received, according to preliminary reports. This number is greater than that received in any previous month except November 1943. The experience to date is shown below in both absolute and relative form.

A recent report on evacuees from New Caledonia to the Z.I. between 1 January and 1 November 1943 gives a valuable classification of evacuees by cause. The number of patients involved, 3,073, is said to represent 36.5 percent of the total evacuees from the forward area who were evacuated to the Zone of the Interior. The distribution follows:

Cause	Percent
Neuropsychiatric	32.7
Gunshot Wounds	18.1
Malaria	15.5
Fractures	6.0
Arthritis	4.7
Pulmonary Disease	4.0
Cardio-Vascular Disease	3.1
Malnutrition	2.8
Skin Diseases	2.6
Gastro-Intestinal Diseases	2.6
Aural Disease	1.7
Genito-Urinary Diseases	1.2
Sinusitis	.7
Jaundice	.5
Miscellaneous	3.8
Total	100.0
Number of Cases	3,073

PATIENTS EVACUATED FROM OVERSEAS



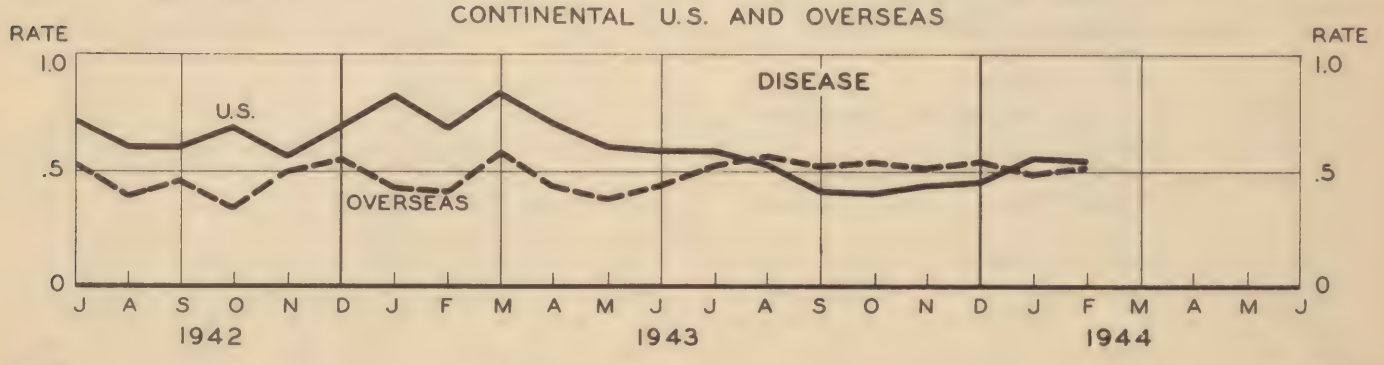
MORTALITY FROM NONBATTLE CAUSES

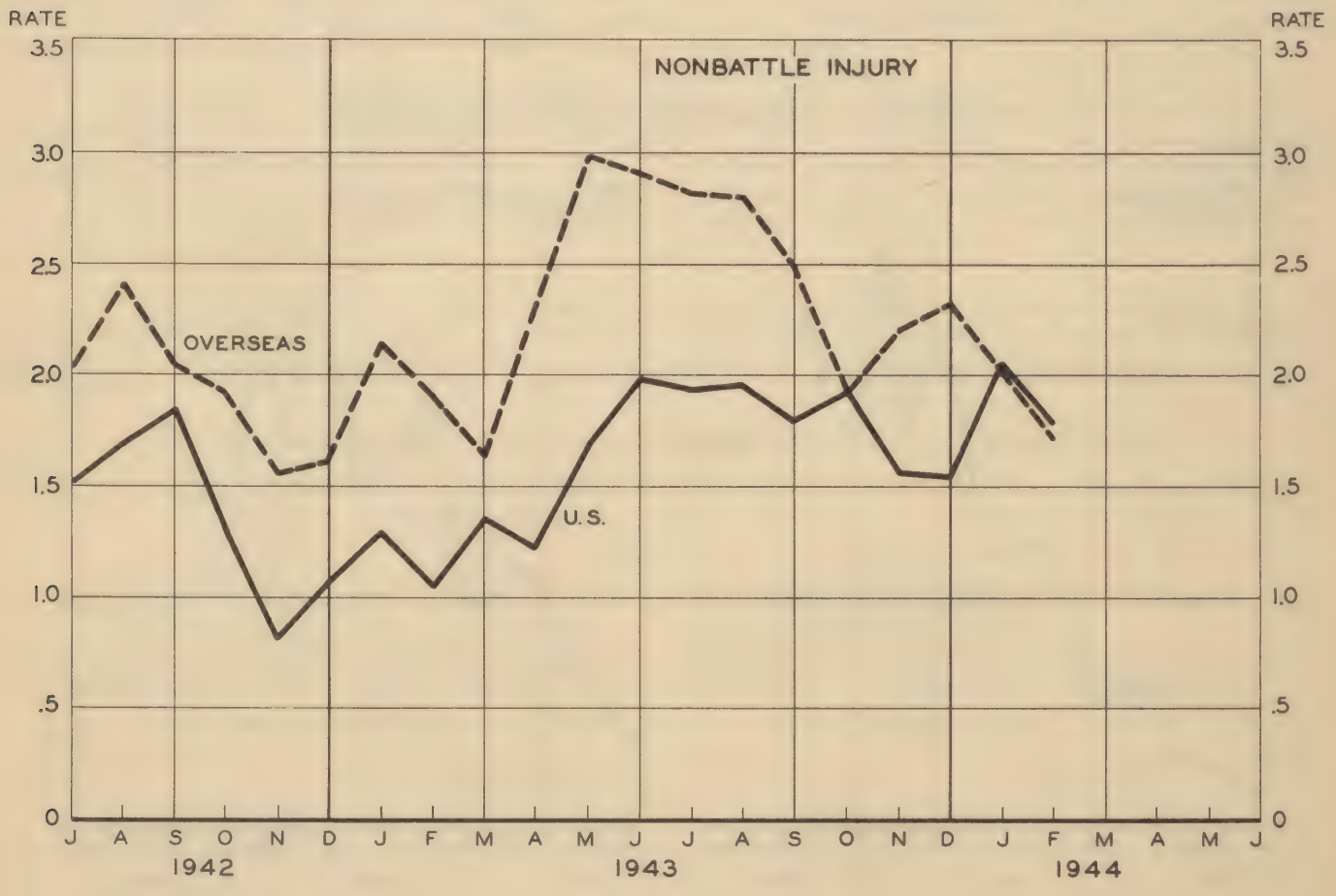
There was no real change in the death rate from disease in the U. S. during February, but the preliminary rate for nonbattle injury decreased somewhat below the revised high rate of 2.1 deaths per 1,000 men per year for January. There is evidence that perhaps as many as 25 percent of the accidental deaths in the U. S. are not being reported on the weekly statistical reports to The Surgeon General. Consequently, the actual death rates from injury are believed to be considerably higher than reported.

The overseas series shown on the panels below have been revised on the basis of a study of the deaths reported on the weekly (now monthly) statistical report to The Surgeon General, which showed that some changes in classification were in order. However, the general level of the series remains well above that for the U. S. As in the case of accidental deaths in the U. S., there is some evidence that many deaths from injury may be omitted from the counts in the current statistical reports. The previously reported telegraphic rate for January, based on incomplete returns, was found to be too high and has been revised to 2.0.

DEATHS PER THOUSAND MEN PER YEAR, NONBATTLE CAUSES

CONTINENTAL U.S. AND OVERSEAS

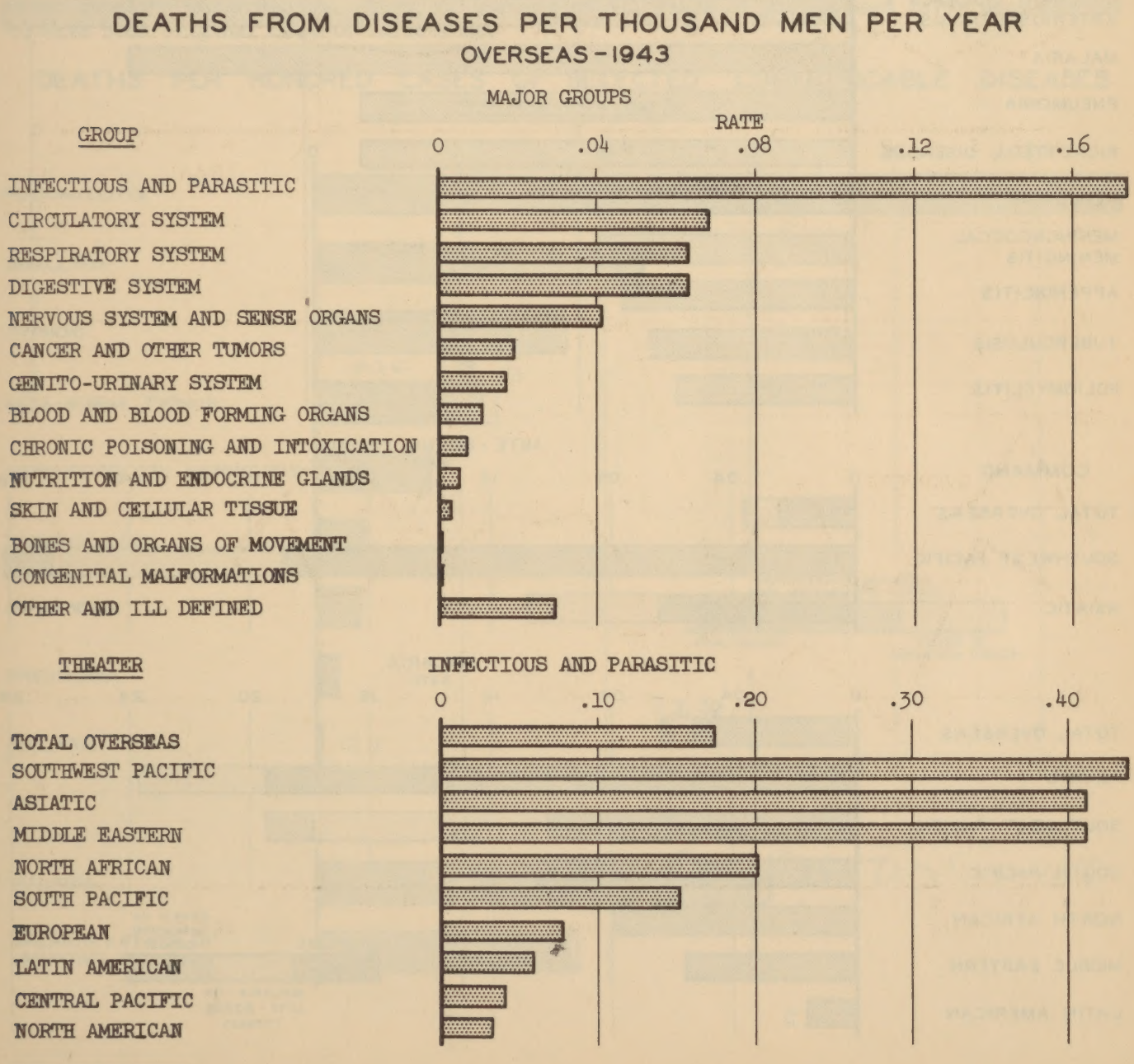




DEATHS FROM DISEASE OVERSEAS, 1943

During 1943 there were reported only 800 deaths from disease in overseas theaters, or about .50 deaths per 1,000 men per year, a fifth of the reported rate for accidental death overseas. Although some deaths from disease overseas may not be reported on the current statistical reports to The Surgeon General, there is no evidence of serious error as in the case of deaths from injury. When the deaths from disease are classified according to the latest International List of Causes of Death it is found that about a third of them were caused by infectious and parasitic diseases. The relative magnitudes of the death rates for each disease-group in the International List may be seen in the first panel below.

The rate for infectious and parasitic diseases is estimated at .17 deaths per 1,000 men per year, and is largely made up of deaths from malaria, mite-borne typhus, meningococcal meningitis, and tuberculosis. The bottom panel ranks the various theaters according to their respective rates for infectious and parasitic diseases, the scale differing from that of the top panel. Infectious and parasitic diseases caused more deaths than any other disease-group in North Africa, the British Isles, the Southwest Pacific, Asia, and the Middle East. In North Africa the chief components were malaria, poliomyelitis, and memingococcal meningitis. In the British Isles the chief disease was meningococcal meningitis, but only 11 deaths were attributed to this cause. In the Southwest Pacific the primary infectious and parasitic diseases were mite-borne typhus and malaria. In the Latin American and North American Theaters the infectious and parasitic diseases caused fewer deaths than did diseases of the circulatory system.

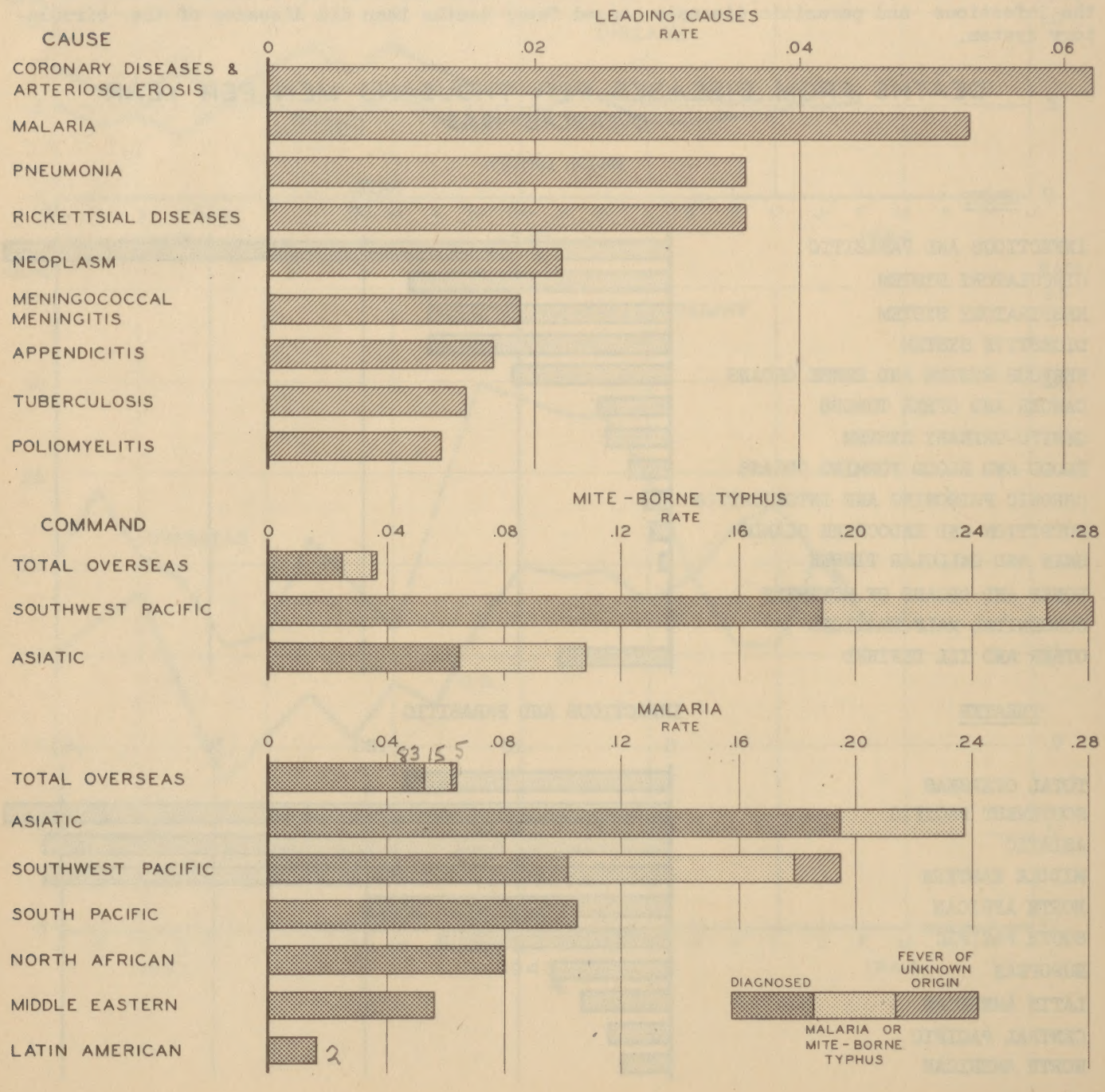


DEATHS FROM DISEASE OVERSEAS, 1943 (Continued)

The nine leading causes of death from disease overseas are ranked in the first chart below. The leading cause, coronary diseases and arteriosclerosis, was also the primary cause in all commands except North Africa, the South Pacific, the Southwest Pacific, and Asia, where malaria and mite-borne typhus were the outstanding causes. The panels at the bottom of the page show, on a different scale, the death rates for malaria and mite-borne typhus where these diseases occurred.

Although malaria caused more deaths than any other disease among troops overseas during 1943, there were only 83 deaths attributed to diagnosed malaria. This represents a rate of .05 per thousand men per year. Mite-borne typhus was the next most important disease as a cause of death, accounting for 40 deaths and a rate of .025. Fifteen deaths were attributed jointly to mite-borne typhus and malaria. In the charts which follow the extensions on the bars for all troops overseas, for the Southwest Pacific, and for Asia, represent estimates of the death rates which would obtain if all the deaths reported to have been caused by both mite-borne typhus and malaria, and by undiagnosed fever, were actually assignable to either malaria or mite-borne typhus. + 1 Epidemic typhus

DEATHS FROM SELECTED DISEASES PER THOUSAND MEN PER YEAR
OVERSEAS - 1943



FATALITY FROM DISEASE OVERSEAS

In the chart which follows fatality rates for selected communicable diseases are shown on the basis of the reported overseas experience of the Army during 1943. All of the bars are drawn to the same scale except that for malaria, which has been expanded so that some of the detail might be shown more clearly. Poliomyelitis, with 20 deaths reported among 72 cases, had the highest fatality of any of the reported communicable diseases. The second highest fatality rate is that for smallpox, but it is based upon only 4 deaths among 35 reported cases. The fatality of 4.2 percent for meningococcal meningitis, representing 30 deaths among 715 reported cases, is especially noteworthy, because the rate for World War I was almost 40 percent. The fatality estimates for mite-borne typhus and malaria are rather approximate because some deaths were reported as caused by both malaria and mite-borne typhus and others by undiagnosed fever. The bars for malaria and mite-borne typhus have three parts in each case. The first measures the fatality associated with the single diagnosis; the addition of the second segment inflates the fatality rate to the value which would obtain if all deaths from both malaria and mite-borne typhus were properly attributable to either typhus or malaria; and the third segment, providing a maximum estimate, gives the value of the rate if all deaths attributed to undiagnosed fever were actually caused by either malaria or mite-borne typhus.

The inclusion of recurrent attacks of malaria as admissions, and the classification of cases of malaria as undiagnosed fever, make it necessary to estimate the number of malaria infections. During 1943 there were 150,700 admissions for malaria reported overseas. Use of the estimate of 2.3 admissions per infection reduces this number to 65,500, the base upon which fatality was computed. Also, 60 percent of all cases of undiagnosed fever were assumed to have been original malaria infections.

DEATHS PER HUNDRED CASES OF SELECTED COMMUNICABLE DISEASES OVERSEAS-1943